# SENATE—*Thursday, May 11, 1972*

The Senate met at 11:30 a.m. and was called to order by the Acting President pro tempore (Mr. METCALF).

PRAYER

The Chaplain, the Reverend Edward L. R. Elson, D.D., offered the following prayer:

O Thou Ancient of Days, yet ever-present Lord of life, we lift our hearts to Thee for wisdom and strength. Penetrate the darkness of our shadowed human scene with Thy divine light and truth. When we cannot see the way, wilt Thou illuminate our path? Give Thy servants here grace as well as strength, patience as well as resoluteness, and above all else the will to obey Thy guidance. Help us not only to speak, but to hear with understanding, and above all voices may we hear Thy voice. In the midst of confusion and conflict, help us, both leaders and people, to seek always first "Thy judgments which are more to be desired than gold, yea, much fine gold; sweeter also than honey and the honey comb. Moreover by them are we warned and in keeping of them there is great reward."

In the Redeemer's name we pray. Amen.

## THE JOURNAL

Mr. MANSFIELD. Mr. President, I ask unanimous consent that the reading of of the Journal of the proceedings of Wednesday, May 10, 1972, be dispensed with.

The ACTING PRESIDENT pro tempore. Without objection, it is so ordered.

## MESSAGE FROM THE HOUSE

A message from the House of Representatives by Mr. Berry, one of its reading clerks, informed the Senate that, pursuant to the provisions of section 1, Public Law 86–420, the Speaker has appointed as a member of the U.S. delegation of the Mexico-United States interparliamentary group, Mr. THONE, of Nebraska.

The message also announced that the Speaker has affixed his signature to the following enrolled bills:

H.R. 8083. An act to amend title 5, United States Code, to provide a career program for, and greater flexibility in management of, air traffic controllers, and for other purposes; and

H.R. 9212. An act to amend the provisions of the Federal Coal Mine Health and Safety Act of 1969 to extend black lung benefits to orphans whose fathers die of pneumoconiosis, and for other purposes.

The enrolled bills were subsequently signed by the Acting President pro tempore (Mr. METCALF).

## COMMITTEE MEETINGS DURING SENATE SESSION

Mr. MANSFIELD. Mr. President, I ask unanimous consent that all committees be authorized to meet during the session of the Senate today.

The ACTING PRESIDENT pro tempore. Without objection, it is so ordered.

## ORDER OF BUSINESS

Mr. MANSFIELD. Mr. President, I ask unanimous consent that the Senate turn to the consideration of Calendar Nos. 753 and 754.

The ACTING PRESIDENT pro tempore. Without objection, the Senate will proceed to the consideration of those measures.

## LONG-TERM LEASING OF INDIAN LAND ON THE WALKER RIVER RESERVATION

The bill (S. 953) to amend section 1 of the act of August 9, 1955, relating to the leasing of Indian lands, was considered, ordered to be engrossed for a third reading, read the third time, and passed, as follows:

S. 953

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That section 1 of the Act of August 9, 1955 (69 Stat. 539), as amended, is amended by inserting immediately after "Fort Mojave Reservation,", the following: "the Walker River Reservation, Nevada,".

Amend the title so as to read: "A bill to authorize long-term leasing of Indian land on the Walker River Reservation."

The title was amended, so as to read: "A bill to authorize long-term leasing of Indian land on the Walker River Reservation."

Mr. MANSFIELD. Mr. President, I ask unanimous consent to have printed in the RECORD an excerpt from the report (No. 92–785), explaining the purposes of the measure.

There being no objection, the excerpt was ordered to be printed in the RECORD, as follows:

PURPOSE

The bill amends the act of August 9, 1955 (69 Stat. 539), as amended, by authorizing leases on the Walker River Reservation for a period up to 99 years for public, religious, educational, recreational, residential, or business purposes and for farming purposes which require the making of substantial investment in the improvement of the land for the growing of specialized crops.

NEED

The Walker River Indians have an immediate need for this additional leasing authority for their reservation which consists of a little over 320,500 acres. A development organization, know. as Cibola Freeport Authority, Ltd., has expressed an interest in leasing approximately 7,000 acres of tribal land on the Walker River Reservation for the purpose of creating a warehouse and industrial complex, including the construction and operation of an airport for use consistent with such purposes and the construction of a residential complex for the persons employed there. The leased premises on the Walker River Reservation would be an air cargo distribution point to markets within the Western States. The Cibola Industry has expended considerable sums of money doing preliminary study and research on this project. However, the developers will need a period longer than 50 years in which to recover their investment and to finance the development of this industrial site. The tribal governing body has requested that this legislation be enacted.

BACKGROUND

In 1955 Congress gave general authority for long-term surface leases on any trust or restricted Indian lands, whether tribally or individually owned. Under the 1955 act leases for various purposes, such as business and residential development, could be granted for terms of up to 25 years and could contain an option permitting renewal for not to exceed 25 years. The effect was to permit 50-year leases of Indian land. Farming leases which involved substantial improvements could be made for 25 years and grazing leases were limited to 10 years.

Beginning in 1959 and the 1955 act has been amended 19 times to allow development leases to be made for up to 99 years on certain reservations. In 1964 Congress also gave authority for 99-year leases on the Colorado River Reservation. In addition, in 1966 Congress authorized the leasing of Indian land on the San Xavier and Salt River Pima-Maricopa Indian Reservations for a term of not to exceed 99 years.

In attempting to make use of the 1955 act authority, it became apparent that lessees would be severely limited in financing the development of Indian lands with a maximum tenure of only 50 years. Many lenders are restricted by law, regulation or their policies from making leasehold development loans unless the lease is for a full 50 years, and in some instances longer. Mortgage insurance under the National Housing Act is available for leasehold residential loans only if a 50-year term exists. This means that the borrower must have a full 50-year lease term remaining when a loan is made. From a practical standpoint, this means that many of the important potential sources of financing cannot be available to a developer with a 50-year lease.

By the time he has prepared development plans and accomplished the many other necessary preliminaries to financing, he no longer has a 50-year term remaining. Furthermore, no phased development of a substantial acreage is possible. A lessee is limited to a site which can be financed and developed instantly.

The effect of this on Indian landowners is obvious. The authority to make development leases is empty if the property cannot be developed, and only insignificant amounts of land will be developed if lessees cannot obtain financing. The fewer the sources of financing which are available, the smaller will be the number and quality of developers who will lease Indian land.

These are some of the considerations which have motivated Congress in previous years to extend the term for which development leases can be made.

COST

No additional expenditure of Federal funds will result from the enactment of S. 953.

AMENDMENTS

The committee approved a technical amendment to S. 953 recommended by the Department of the Interior.

## KANSAS-NEBRASKA BIG BLUE RIVER COMPACT

The Senate proceeded to consider the bill (H.R. 8116) to consent to the Kansas-Nebraska Big Blue River compact, which had been reported from the Com-

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mittee on Interior and Insular Affairs with an amendment, on page 10, at the beginning of line 15, strike out "(b) During the period May 1–September 30 the process of laws in effect in that State." and insert "1968, that were then inactive shall be canceled by due process of laws in effect in that State.".

The amendment was agreed to.

The amendment was ordered to be engrossed and the bill to be read a third time.

The bill was read the third time, and passed.

Mr. MANSFIELD. Mr. President, I ask unanimous consent to have printed in the RECORD an excerpt from the report (No. 92–786), explaining the purposes of the measure.

There being no objection, the excerpt was ordered to be printed in the RECORD, as follows:

PURPOSE OF THE MEASURE

The purpose of H.R. 8116, is to give congressional consent to a compact between Kansas and Nebraska, dividing the waters of the Big and Little Blue Rivers. A companion bill, S. 1726, introduced by Senator Roman Hruska from Nebraska, has been introduced in the Senate.

BACKGROUND

The Big Blue River Basin drains an area of about 9,700 square miles of which about 75 percent is in south central Nebraska and 25 percent is in north central Kansas. The Big and Little Blue Rivers, originating in Nebraska, are the principal streams of the Basin and are tributaries of the Kansas River. Generally flowing from north to south, the Big and Little Blue Rivers cross the Nebraska-Kansas State line separately to unite in the headwaters of the Tuttle Creek Reservoir. Tuttle Creek Reservoir was constructed by the Corps of Engineers on the Big Blue River and is the only existing major storage and streamflow regulation feature on the basin.

During the period of streamflow record of about 30 years, the Big and Little Blue Rivers' flows passing the State line into Kansas have averaged 564,000 acre-feet and 267,000 acre-feet per year, respectively. The Big Blue River contributes an average of about 1.3 million acre feet per year to the Kansas River, near Manhattan, Kans.

Consent to negotiate the compact was granted to Nebraska and Kansas by the act of June 3, 1960 (74 Stat. 160). Negotiations on the compact were concluded on January 25, 1971; the compact was ratified by the signatory States in April 1971. H.R. 8116 passed the House of Representatives on November 15, 1971, amended.

DISCUSSION OF LEGISLATION

*Section 1* of H.R. 8116 presents the text of the compact as ratified by the signatory States in April 1971. The compact is comprised of eight articles.

Articles I–IV are descriptive and set forth compact definitions. Article I consists of definitions. Article II is a description of the Big Blue River Basin. Article III establishes an interstate executive agency to administer the compact and defines administration membership and government. Article IV defines the administrative responsibilities of each State.

Articles V–VII contain the substantive provisions of the compact. The heart of the compact is article V, the apportionment of waters of the Big Blue River Basin. The apportionment takes into account the historic flows of the basin's streams, the existing water rights and possible future developments and water requirements in both States, based upon studies made by Federal and State agencies. Article VI sets forth principles for preservation of water quality. Article VII contains provisions limiting storage of water in Nebraska.

Article VIII sets forth the procedures for ratification. *Section 2* states that the United States, by consent of Congress, must be joined as a party in litigation in the U.S. Supreme Court in any action resulting from the compact if one or more of the signatory States is a party. Article VIII of the compact makes this section necessary, and the compact shall be binding and obligatory only when the consenting act contains such a provision.

*Section 3* reserves the right to alter, amend or repeal the act.

COMMITTEE AMENDMENT

The committee amendment set forth above, is a technical amendment to correct a typographical error in the House measure.

COMMITTEE COMMENT

The committee notes with approval that article VI of the compact provides for cooperation to maintain the quality of waters of the Big Blue River Basin in compliance with the provisions of the Federal Water Quality Act of 1965 and amendments which have been or may be made thereto. Realizing the regional nature of water resources management including management of water quality, the committee expects that Federal policy in the water quality field will increasingly give consideration to the total environmental and water quality problems of major stream systems such as the Missouri and Mississippi.

The committee, in recommending congressional approval of the compact interprets the language of article VI as facilitating and posing no barrier to the management of the Big Blue River Basin in compliance with whatever broader system management plans might subsequently be adopted pursuant to Federal policy.

COMMITTEE RECOMMENDATION

The Committee on Interior and Insular Affairs recommends that H.R. 8116, as amended, be enacted. The adoption of the technical amendment and the motion to report H.R. 8116 to the Senate with a recommendation of enactment were unanimously agreed to by the members of the committee present in executive session on April 26, 1972.

## ORDER OF BUSINESS

The ACTING PRESIDENT pro tempore. The Senator from Pennsylvania.

Mr. SCOTT. Mr. President, I yield back my time under the standing order.

## TRANSACTION OF ROUTINE MORNING BUSINESS

The ACTING PRESIDENT pro tempore. Under the previous order, there will now be a period for the transaction of routine morning business for not to exceed 30 minutes, with statements limited therein to 3 minutes.

Mr. MANSFIELD. Mr. President, I suggest the absence of a quorum.

The ACTING PRESIDENT pro tempore. The clerk will call the roll.

The second assistant legislative clerk proceeded to call the roll.

Mr. ROBERT C. BYRD. Mr. President, I ask unanimous consent that the order for the quorum call be rescinded.

The ACTING PRESIDENT pro tempore. Without objection, it is so ordered.

## COMMUNICATIONS FROM EXECUTIVE DEPARTMENTS, ETC.

The ACTING PRESIDENT pro tempore (Mr. METCALF) laid before the Senate the following letters, which were referred as indicated:

PROPOSED AMENDMENT OF TITLE 5, UNITED STATES CODE

A letter from the Administrator, National Aeronautics and Space Administration, transmitting a draft of proposed legislation to amend title 5, United States Code, to provide for a change in the titles of the NASA Associate Administrator positions listed under Level V of the Executive Schedule, and to add three more such positions to such Schedule (with accompanying papers); to the Committee on Aeronautical and Space Sciences.

REPORT REQUIRED UNDER ANIMAL WELFARE ACT

A letter from the Acting Secretary of Agriculture, transmitting, pursuant to law, a report relating to animal welfare (with an accompanying report); to the Committee on Agriculture and Forestry.

REPORT ON FEDERAL CONTRIBUTIONS PROGRAM EQUIPMENT AND FACILITIES

A letter from the Director of Civil Defense, Office of the Secretary of the Army, transmitting, pursuant to law, a report on Federal Contributions Program Equipment and Facilities, for the quarter ended March 31, 1972 (with an accompanying report); to the Committee on Armed Services.

BATTLE ACT REPORT

A letter from the Assistant Secretary for Economic Affairs, Department of State, transmitting, pursuant to law, the twenty-fourth report on the Battle Act, for the year 1971 (with an accompanying report); to the Committee on Foreign Relations.

PROPOSED AMENDMENT OF UNITED STATES INFORMATION AND EDUCATIONAL EXCHANGE ACT OF 1948

A letter from the Assistant Secretary for Congressional Relations, Department of State, transmitting a draft of proposed legislation to further amend the United States Information and Educational Exchange Act of 1948 (with an accompanying paper); to the Committee on Foreign Relations.

PROPOSED LEGISLATION RELATING TO MEMBERSHIP AND PARTICIPATION IN THE SOUTH PACIFIC COMMISSION

A letter from the Assistant Secretary for Congressional Relations, Department of State, transmitting a draft of proposed legislation to amend the joint resolution providing for membership and participation by the United States in the South Pacific Commission (with accompanying papers); to the Committee on Foreign Relations.

REPORT ON GRANTS FOR BASIC SCIENTIFIC RESEARCH AND TRANSFER OF TITLE TO GOVERNMENT EQUIPMENT

A letter from the Assistant Secretary for Defense, transmitting, pursuant to law, a report on grants for basic scientific research and transfer of title to Government equipment, for the calendar year 1971 (with an accompanying report); to the Committee on Government Operations.

REPORT OF COMPTROLLER GENERAL

A letter from the Comptroller General of the United States, transmitting, pursuant to law, a report entitled "Examination of Financial Statements Government Printing Office Fiscal Year 1971", dated May 10, 1972 (with an accompanying report); to the Committee on Government Operations.

PROPOSED AMENDMENT OF TITLE 38, UNITED STATES CODE

A letter from the Administrator of Veterans Affairs, transmitting a draft of proposed legislation to amend section 210(c) of title 38, United States Code, to extend the authority of the Administrator of Veterans Affairs to grant equitable relief from administrative error (with an accompanying paper); to the Committee on Veterans' Affairs.

## PETITIONS

Petitions were laid before the Senate and referred as indicated:

By the ACTING PRESIDENT pro tempore (Mr. METCALF):

A concurrent resolution of the Legislature of the State of Hawaii; to the Committee on Interior and Insular Affairs:

"SENATE CONCURRENT RESOLUTION No. 17

"Concurrent resolutions requesting the U.S. Congress to allocate funds for the planning and construction of water resource facilities at Kokee, Kauai

"Whereas, for the past decade the island population of Kauai has declined because of the lack of employment opportunities; and

"Whereas, the sagging economy of Kauai is due in part to the inability to fully develop its land and water resources to encourage new opportunities for the production of sugar and other highly lucrative crops for further export throughout the world; and

"Whereas, for the past several years there has been some development of water storage in and around Kokee, Kauai for the optimum utilization of water resources on that island; and

"Whereas, private industry with the cooperation of federal and State agencies dating as far back as 1924, has endeavored to provide investigations and reports indicating the need for the planning and construction of water resource facilities forthwith to meet the needs of irrigation, hydroelectric power, wildlife improvement and flood control for that section of Kauai; now, therefore

"Be it resolved by the Senate of the Sixth Legislature of the State of Hawaii, Regular Session of 1972, the House of Representatives concurring, that the U.S. Congress be and is hereby requested to allocate funds for the planning and construction of water resource facilities at Kokee, Kauai; and

"Be it further resolved that certified copies of this Concurrent Resolution be transmitted to the President of the Senate of the United States, the Speaker of the House of Representatives of the United States, and to each member of Hawaii's delegation to the United States Congress."

## ORDER FOR STAR PRINT OF SENATE RESOLUTION 300

Mr. ROBERT C. BYRD. Mr. President, due to a clerical error, Senate Resolution 300, which the Senator from Minnesota (Mr. MONDALE) introduced yesterday, failed to include the dollar figure representing supplemental expenditures requested by the Select Committee on Equal Educational Opportunity. I ask unanimous consent that Senate Resolution 300 be star printed to include the figure "123,000" immediately following the dollar sign on line 6.

The PRESIDING OFFICER. Without objection, it is so ordered.

## INTRODUCTION OF BILLS AND JOINT RESOLUTIONS

The following bills and joint resolutions were introduced, read the first time and, by unanimous consent, the second time, and referred as indicated:

By Mr. HATFIELD:

S. 3596. A bill pertaining to the inheritance of enrolled members of the Confederated Tribes of the Warm Springs Reservation of Oregon. Referred to the Committee on Interior and Insular Affairs.

By Mr. TOWER:

S. 3597. A bill for the relief of Hildegard Mercedes Schlubach Ercklentz, Enno W. Ercklentz, Jr., Hildegarde Ercklentz Merrill, and Alexander T. Ercklentz. Referred to the Committee on the Judiciary.

By Mr. WILLIAMS (for himself, Mr. JAVITS, Mr. BEALL, Mr. CRANSTON, Mr. EAGLETON, Mr. KENNEDY, Mr. HUGHES, Mr. MONDALE, Mr. NELSON, Mr. PELL, Mr. RANDOLPH, Mr. STAFFORD, Mr. STEVENSON, and Mr. TAFT):

S. 3598. A bill to strengthen and improve the protections and interests of participants and beneficiaries of employee pension and welfare benefit plans. Referred to the Committee on Labor and Public Welfare.

By Mr. PERCY (for himself, Mr. COOK, and Mr. SCHWEIKER):

S. 3599. A bill to expand and improve the direct food distribution program. Referred to the Committee on Agriculture and Forestry.

By Mr. HARTKE:

S. 3600. A bill to establish a national growth policy; to provide for the creation of a National Growth Policy Planning Board; and to provide Federal assistance to the States for growth policy planning. Referred to the Committee on Government Operations.

By Mr. BROOKE:

S. 3601. A bill providing reimbursement to States and political subdivisions for police and National Guard overtime compensation incurred with respect to national disturbances. Referred, by unanimous consent, to the Committee on the Judiciary; and if and when reported by that committee, to the Committee on Armed Services, if so desired by that committee.

By Mr. FULBRIGHT (by request):

S.J. Res. 231. A joint resolution to authorize the appropriation for the contribution by the United States for the support of the International Agency for Research on Cancer. Referred to the Committee on Foreign Relations.

## STATEMENTS ON INTRODUCED BILLS AND JOINT RESOLUTIONS

By Mr. HATFIELD:

S. 3596. A bill pertaining to the inheritance of enrolled members of the Confederated Tribes of the Warm Springs Reservation of Oregon. Referred to the Committee on Interior and Insular Affairs.

Mr. HATFIELD. Mr. President, during the 91st session, Congress amended the Yakima Inheritance Act to permit the Yakima Tribe to purchase lands that were about to pass into nonmembers' hands through inheritance.

The amendment provided a means whereby the tribal council can maintain the integrity of the tribal lands while assuring nonmember heirs payment of fair value for their devise.

The Warm Springs Tribe of Oregon has been conducting a number of outstanding programs which have added greatly to the development of tribal assets and capabilities.

The Warm Springs Tribal Council desires the same authority as that enjoyed by the Yakimas to maintain the integrity of tribal lands. I believe my colleagues will recognize the need of the bill I am introducing today.

Mr. President, I ask unanimous consent that the bill I am introducing be printed in the RECORD at the conclusion of my remarks.

There being no objection, the bill was ordered to be printed in the RECORD, as follows:

S. 3596

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,*

SEC. 1. (a) A person who is not an enrolled member of the Confederated Tribes of the Warm Springs Reservation of Oregon shall not be entitled to receive by devise or inheritance any interest in trust or restricted lands within the Warm Springs Reservation or within the area ceded by the treaty of June 25, 1855 (12 Stat. Treaties, 37), if, while the decedent's estate is pending before the Examiner of Inheritance, the Confederated Tribes of the Warm Springs Reservation of Oregon pay to the Secretary of the Interior, on behalf of such person, the fair market value of such interest as determined by the Secretary of the Interior after appraisal. The interest for which payment is made shall be held by the Secretary in trust for the Confederated Tribes of the Warm Springs Reservation of Oregon.

(b) On request of the Confederated Tribes of the Warm Springs Reservation of Oregon the Examiner of Inheritance shall keep an estate pending for not less than two years from the date of decedent's death.

(c) When a person who is prohibited by subsection (a) from acquiring any interest by devise or inheritance is a surviving spouse of the decedent, a life estate in one-half of the interest acquired by the Confederated Tribes of the Warm Springs Reservation of Oregon shall, on the request of such spouse, be reserved for that spouse and the value of such life estate so reserved shall be reflected in the Secretary's appraisal under subsection (a).

SEC. 2. The provisions of section 1 of this Act shall apply to all estates pending before the Examiner of Inheritance on the date of this Act, and to all future estates, but shall not apply to any estate heretofore closed.

By Mr. WILLIAMS (for himself, Mr. JAVITS, Mr. BEALL, Mr. CRANSTON, Mr. EAGLETON, Mr. KENNEDY, Mr. HUGHES, Mr. MONDALE, Mr. NELSON, Mr. PELL, Mr. RANDOLPH, Mr. STAFFORD, Mr. STEVENSON, and Mr. TAFT):

S. 3598. A bill to strengthen and improve the protections and interests of participants and beneficiaries of employee pension and welfare benefit plans. Referred to the Committee on Labor and Public Welfare.

RETIREMENT INCOME SECURITY FOR EMPLOYEES ACT OF 1972

Mr. WILLIAMS. Mr. President, today, together with Senator JAVITS and other Senators, I am introducing the Retirement Income Security for Employees Act of 1972.

This bill is the product of one of the most comprehensive studies undertaken by this Senate into the private pension plan system of the United States. It embodies proposals to eliminate identified and proven deficiencies in private pension plans which, our Labor Subcommittee study showed, cause workers to fail to realize benefits which they had worked for and expected to receive upon

retirement. This legislation will establish practical and uniform Federal requirements to assure that workers receive those benefits.

Private pension plans have existed in the United States for nearly 100 years. During that time, they have become a potent force in the national economy, as well as a symbol of old-age security for 30 million workers and their families. Today their combined assets in excess of $130 billion represent the largest single source of virtually unregulated capital in the country. The national interest requires that some regulation and oversight of these moneys be initiated.

Congress has exhibited a legislative interest in private pension plans since the early 1950's, following the surge in private plan growth after World War II, when new tax benefits made the establishment of pension plans attractive to employers. Congressional investigations in the 1950's culminated in the 1959 Welfare and Pension Plans Disclosure Act, a relatively weak law which fulfilled its sponsors' commendable aim of requiring plans to report their financial activities yearly to the Department of Labor, but which left the Secretary of Labor without any enforcement or oversight powers. Even the amendment of this act in 1962, instituting penalties for crimes such as embezzlement and bribery, did not satisfy those in Congress who realized their responsibility to the millions of retired and about-to-be-retired workers who had no one else to turn to to help make their pension dreams a reality.

A report recently submitted by the Subcommittee on Labor points out that at least eight executive agencies have some authority over the operations of private pension plans and the welfare of their participants, but that Federal authority, except in the event of criminal action, is confined mainly to supervision of the reporting requirements of the Welfare and Pension Plans Disclosure Act.

While these reporting requirements enable the Government to assess the scope of the private pension plan system in the United States, and provide detailed financial information on particular plans when requested, they do not do the job which the public is looking to Congress to accomplish—the protection of the benefits and of the workers' interest in them so that the dream of retirement security will become a reality for those 30 million participants.

The Labor Subcommittee investigation has witnessed the growth of two competing schools of thought on the need for legislative reform of the private pension plan system. Whereas one school advocates stringent Government control, which would divest the private system of all discretion, the other strongly resists any legislative attempts to cure the shortcomings of the private pension plan system, claiming legislation would destroy the flexibility of such plans. Neither view is realistic. The great goals of reform legislation must be to guarantee retirement security to the worker, and to assure the continued growth and expansion of private pensions. Achieving the financial security promised by pension plans, and the flexibility necessary to fulfill that objective are not incompatible. It is our belief that corrective measures, as outlined in our bill, will provide reasonable and feasible measures to achieve the reforms necessary. They will not only serve to eliminate existing inequities, but also contribute to the strengthening and improving of the private pension plan system so that it will better serve the needs and aspirations of employer and employee together.

The major purpose of the Retirement Income Security for Employees Act of 1972 is to set forth the minimum standards of protection of the benefits of workers. There is no intent to restrict improvements beyond those minimums which private pension plans can voluntarily assume. Under the provisions of this bill, 8 years of service would entitle a worker to 30-percent vested benefits, increasing at 10 percent per year until full vesting is achieved at 15 years of service. Eight years recognizes the employee's claim to a vested right early in his career, once he has clearly moved out of the transient or casual category. To vest him later would run the risk of unreasonable forfeiture of ultimate retirement benefits. Because vesting without funding is an empty promise, our bill would require funding of all pension benefit liabilities over a 40-year period, with a Federal pension insurance program to assure against loss of vested benefits prior to full funding of a plan. Further, enough has been written and studied about the complicated portability concept to warrant the start under this bill of a voluntary system for the transfer of vested credits. The bill also calls for improvement in the fiduciary standards and requires a more comprehensive disclosure to plan participants of their rights and obligations. Various fiduciary abuses, such as party-in-interest transactions, which have threatened the security of assets belonging to plan participants, are legislatively prohibited.

Pensions are not gratuities, but earnings saved and deferred to retirement. They represent compensation which the employee would have received in his paycheck had he not belonged to a pension plan. American workers have a right to expect that financial support in their retirement years will come from more than social security benefits. Only with a combination of these two incomes can an American worker look to the twilight stage of his life without fear of financial insecurity.

As legislators, we recognize that pension rights and obligations are essentially a matter of contractual relationship and liability between employer and employee. We are faced with the findings of our Senate study and the hardships and inequities of private pension plans it has surfaced. History has recorded the problems faced by a society of working men and women whose expectations cannot be fulfilled. The beliefs and hopes for financial security in retirement of American workers can no longer be the shattered dreams and illusions of people whose working lives will not allow them a second time around. Congress can no longer ignore the pleas of American workers for help in achieving pension hopes. Congress must assume the initiative for reform and produce legislation which can respond to the needs of its people and yet retain flexibility to spur the growth of private pensions.

INTRODUCTION OF THE WILLIAMS-JAVITS PENSION REFORM BILL (S. 3598): NEW HOPE FOR AMERICAN WORKERS

Mr. JAVITS. Mr. President, this is the year for pension reform. The new bill we introduce today meets all the problems of private pensions which have surfaced in recent years, and proposes solutions for them.

And, we believe it has the support needed to pass.

I. THE CHALLENGE TO PRIVATE RETIREMENT SYSTEMS

One of the most pressing challenges that this Nation confronts is the task of providing adequate income security to older Americans—of whom over one-fourth now live in poverty. We in the Government have spent a great deal of time and resources to improve public programs—such as social security and family assistance—to meet this need, but up to now we have never expended an equal effort to strengthen the private retirement systems to which more than 30 million American workers now look for enough of an old age income to provide retirement with dignity.

Yet it is the private system which is so uniquely American, so central to a free economy with a conscience, so fundamental to an economic system in which workers justly believe that they can sustain themselves with dignity on what they can sustain themselves with dignity on what they earn, and on what they have set aside for their own retirement.

II. BIPARTISAN SUPPORT

Today, Senator WILLIAMS and I have joined in a major bipartisan legislative undertaking to reform this Nation's private pension system and raise it to partnership status with our basic Federal social security system. Joining with us is a coalition of Democratic and Republican Senators—members of the Senate Labor and Public Welfare Committee—who have become familiar with the work of the committee on this subject during the past year and who are equally convinced that legislative reform is indispensable toward securing the just expectations of American workers. These cosponsors represent the support necessary to bring this bill to the Senate floor—which we certainly should be able to do this year.

III. A COMBINATION APPROACH TO PENSION REFORM

The bill we are introducing today represents comprehensive pension reform. Unlike some other proposals in the field it does not take a "band aid" approach. What we need and what this legislation delivers is a "bill of pension rights" for the American worker. This legislation will see to it that—

First. The Steven Duanes, the Iris Kweks, the Murray Finkelsteins, the Frank Hoddicks, the Guy Nichols, and all

the other workers with substantial service, who testified to loss of their pension benefits at last year's hearings of the Labor Subcommittee—and the thousands of others who have written to us—will never again need to forfeit pension after pension as they move from job to job or get caught in retrenchment policies;

Second. Workers who are owed benefits under a pension plan will no longer suffer the enormous hardship of losing their benefits, as they did in the Studebaker plant shutdown in South Bend when the pension fund terminated without sufficient assets to pay the benefits they had relied on for their old age security;

Third. Double dealing, manipulation, and personal aggrandizement at the expense of the workers in the handling of their pension funds is effectively halted and those responsible for such unethical practices are removed from their positions of trust.

IV. BACKGROUND

For me, introduction of this bipartisan bill represents the redemption of a 5-year commitment. In February 1967, I introduced the first comprehensive pension reform bill—S. 1103 in the 90th Congress—a bill which has been reintroduced several times, including my current version of it, S. 2, which has been pending for over a year in the Senate Labor Committee.

My original proposal included: minimum vesting standards, minimum funding standards, Federal pension reinsurance, a portability clearinghouse, Federal fiduciary standards, and a single Federal agency charged with enforcing and administering these standards.

The bill Senator WILLIAMS and I are introducing today includes all those elements and is a synthesis of advanced legal thinking and practical experience in the field.

V. COST

Our committee has just begun a careful actuarial study of the prospective costs of the various legislative proposals, but, in my judgment, in an economy in which wages have risen over 6 percent every year since 1965, there is no question about the feasibility of this bill: in any one of the last 7 years, compliance with this bill could have been achieved simply by allocating one of those percentage points to pension vesting, leaving the other 5 percentage points for wages. Only this week, for example, the Treasury Department testified before the House Ways and Means Committee on the cost of various vesting proposals, and stated that the probable cost of my own bill—S. 2, which provides graded vesting beginning at 10 percent after 6 years—would be less than 1 percent of payroll. Presumably the cost of the Williams-Javits bill would be even less, as vesting does not begin until 2 years later.

VI. THE NEXT STEP

We have made a record. We have conducted numerous hearings on loss of pension rights, on unreasonable forfeitures for lack of vesting, on plan collapses for lack of funding, on the need for "reinsurance," on portability, and on fiduciary abuses.

No doubt the rest of the legislative process—legislative hearings, markups in executive session of the committee, and floor consideration—will require more concentration and hard work.

With Senator WILLIAMS I am ready to begin, and to finish the job this year.

Mr. President, I ask unanimous consent that there be printed in the RECORD two summaries of the provisions of the bill, and the text of the bill.

There being no objection, the summaries and bill were ordered to be printed in the RECORD, as follows:

OUTLINE OF MAJOR PROVISIONS OF WILLIAMS-JAVITS PENSION REFORM BILL—RETIREMENT INCOME SECURITY FOR EMPLOYEES ACT

The following are the major provisions of the Williams-Javits Pension Reform Bill:

1. Establishes within the Department of Labor, under the supervision and responsibility of the Secretary of Labor, an Office of Pension and Welfare Plan Administration, to be headed by an Assistant Secretary of Labor appointed by the President, with Senate advice and consent, which will be responsible for promotion, establishment, and administration and operation of employee benefit plans and enforcement of Act.

2. Prescribes minimum vesting requirements whereby an employee, after eight years of service, will acquire a vested nonforfeitable right to 30% of pension benefits, and, thereafter, each year will vest an additional 10% until, at the end of 15 years, he will have vested rights of 100%. Each existing pension plan would be given the option to elect to divide itself into a "new plan" and an "old plan." New employees would be covered only under the "new plan" and old employees would be permitted to elect coverage under either plan. The "old plan" would not be required to comply with the Act's vesting standards but would be required to comply with all other provisions of the Act. The "new plan" would be required to comply with all provisions of the Act.

3. Establishes minimum funding standards of pension plans which will insure that all pension liabilities incurred by the plan after the effective date of the Act will be funded over 40-year period.

4. Authorizes the Secretary to grant variances from funding requirements for qualifying plans under certain circumstances.

5. Establishes voluntary program for portability through a central fund, whereby employees of participating employers may transfer vested credits from one employer to another.

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SUMMARY OF MAJOR PROVISIONS OF THE WILLIAMS-JAVITS PENSION REFORM BILL—RETIREMENT INCOME SECURITY FOR EMPLOYEES ACT

PURPOSES

The purposes of the "Retirement Income Security for Employees Act" are:

1. To confer upon the Secretary of Labor the duty and responsibility to implement and administer the programs and provisions of this Act designed to improve and coordinate the establishment, administration, and operations of private employee pension and welfare plans, and provide for the enforcement of its provisions through administrative and judicial remedies.

2. To improve employee benefit plans by creating standards which will promote and adequately protect the interests of workers covered by such plans by making provisions for:

(a) Prescribed minimum vested benefits to employees after they have worked reasonable periods of time with an employer;

(b) The protection of the worker's earned rights to benefits in his or her pension plan by a combination of minimum and required standards of funding, and a Federal program of insurance to prevent losses of unfunded vested benefits where the plan terminates;

(c) A voluntary system of portability and reciprocity of credits to enable workers to transfer their earned retirement credits among different employers;

(d) Minimum standards and safeguards against abuses in the administration and management of employee benefit funds, and requirement of more comprehensive disclosure and detailed reporting of the plan, including full financial disclosure of the plan's operations, and also sufficient explanation to workers of their rights, obligations, and benefits.

(e) Effective judicial enforcement of the Act's provisions by the government and the workers affected.

TITLE I—ORGANIZATION, POWERS, AND DUTIES OF THE SECRETARY OF LABOR

Section 101. The Secretary would have the responsibility to promote programs and plans for the establishment, administration, and operations of employee benefit plans. It would require the registration of such plans with the Secretary upon compliance with requirements set forth in the statute. The Secretary would also direct, administer, and enforce a pension insurance program and others relating to portability, vesting, funding, and fiduciary and disclosure requirements. The Secretary is empowered to conduct inquiries reasonably necessary to ascertain violations of the Act and use subpoena powers if necessary, and bring authorized actions to enforce the Act, prescribe rules governing actuarial standards, certify actuaries as qualified to furnish reports required under the Act, and furnish Congress with annual reports and studies.

*Office of Administration*

Section 103. Within the Department of Labor, there shall be an Office of Pension and Welfare Plan Administration to be headed by an Assistant Secretary of Labor, appointed by the President, with Senate advice and consent, to exercise power and authority delegated the Secretary of Labor for the administration and enforcement of the Act.

*Coverage and exemptions*

Section 104. Unless exempt, the provisions of the Act apply to any pension or profit-sharing-retirement plan established or maintained by an employer, a union, or both together in any industry or activity affecting interstate commerce. The fiduciary provisions of the Act apply to all employee benefit plans unless exempt.

The Act does not apply to plans administered by federal or state governments, plans administered by religious organizations, plans for the self-employed, plans covering not more than 25 participants, plans established outside the territorial jurisdiction of the United States for citizens of other countries, certain plans for key executives and plans for members of labor organizations which are financed exclusively from the members' dues.

The funding and plan termination insurance requirements are not applicable to profit-sharing or money purchase plans, because of the nature of these plans.

*Registration of plans*

Section 105. Requires covered pension and profit-sharing-retirement plans to file and register with the Secretary and upon a finding that the plan is qualified for registration, the plan is issued a certificate of registration by the Secretary. The criterion for granting a certificate of registration is compliance with the requirements of the Act. Every plan must apply for plan termination insurance as a condition for registration.

*Certificate of rights*

Section 108. The Secretary shall require by regulation that each plan furnish a vested participant, upon his termination of service with the plan, with a certificate reciting the benefits due the participant and the location of the entity responsible for payment and the date when payment shall begin.

TITLE II—VESTING AND FUNDING REQUIREMENTS

*Part A—Vesting*

Eligibility

Section 201. No pension or profit-sharing-retirement plan may require as a condition for eligibility in the plan a period of service longer than six months or an age greater than 21, whichever occurs later.

Vesting Schedule

Section 202. All pension and profit-sharing-retirement plans are required to vest rights in participants with respect to service on or after the effective date of the title at the rate of a 30% vested interest commencing with eight years of service, and increasing by 10% each year thereafter in order that 100% vesting is attained after 15 years of service.

It further provides that no more than three of the eight years required to qualify for a 30% vested right need be continuous years of service, but that service prior to the age of 21 may be ignored in determining eligibility for a vested right unless the participant or his employer has made contributions to the plan with respect to service prior to age 21.

Any plan may allow more liberal vesting than required by the Act.

*Part B—Funding*

Section 210. Every employer is required to provide contributions for funding of his pension plan in a manner adequate to liquidate all pension benefit liabilities which may accrue under the terms of the plan. Employers must fund all normal service costs annually and must fund initial unfunded liabilities existing on the effective date of this Title, or in any plan established after the effective date of the Title, within 40 years from the applicable date. If any amendment to the plan results in substantial increase to the plan's unfunded liabilities, the increase shall be funded separately as if it were a new plan and shall be regarded as a new plan for purposes of the plan termination insurance program established under this Act.

If a plan has an experience deficiency (resulting from actuarial error) for any particular year, the deficiency must be liquidated in no more than a five-year period.

Within six months after the effective date of the Title or within six months after the date of plan establishment, whichever is later, the plan is required to submit a report by an actuary who has been certified by the Secretary, stating information necessary to determine the appropriate application of the funding requirements to the plan. Plans are also required to be reviewed every five years by certified actuaries who are to report the funding obligations that must be met and any surplus or experience deficiencies. The Secretary is authorized to exempt certain plans from these filing requirements.

Discontinuance of Plans

Section 211. The Act requires all funds of terminated pension plans to be distributed according to the following priorities:

First, to retirees or persons eligible to retire on date of plan termination; second, to participants who have vested rights under the plan but who have not reached retirement age; and, third, to other participants. In addition, employers are held liable for contributions owing to the plan that were required to be made by virtue of the funding requirements of the Act, but which were not made as of the date of plan termination.

*Part C—Optional election to divide pension plan*

Section 215. Employers with plans in existence at the effective date of the Act would be given an option. They would be permitted to retain their old plans in existence without complying with the vesting provisions of this Act, but would be required to comply with all other provisions of the Act. In addition, the employer would be required to establish a new plan to conform to the vesting requirements of the Act. All new employees, and any old employees who wish to join the new plan, would be included. The new plan would supplement the prior plan, providing all new employees with the protection required by the vesting provisions of the Act. The old plan would be allowed to phase out as older employees who elected to remain in the old plan retire.

*Part D—Variances*

Section 216. The Secretary is authorized to grant an initial delay of up to three years to comply with the vesting or funding requirements of the Act where initial compliance with these requirements would be unduly burdensome, impractical, or would otherwise adversely affect the interests of employees.

Section 217. Upon a showing that an employer cannot make the required annual contribution to the plan, the Secretary is authorized to permit the deficiency to be funded over a period of five years, provided that the Secretary is satisfied that such a waiver will not adversely affect the interests of employees and will not impair the financial position of the plan termination insurance fund. No waiver may be granted for more than five years, and where a plan has been granted five consecutive waivers, the Secretary may determine:

1. Whether merger on consolidation of the deficiently-funded plan with another plan of the employer is feasible and would not adversely affect the interests of participants involved;

2. Whether in order to protect the interests of participants and the position of the plan termination insurance fund, it is necessary to order the plan to terminate; and

3. Such other action as may be appropriate to carry out the purposes of the Act.

No amendments increasing plan benefits are permitted during any period that a funding waiver is in effect.

The Secretary is required to promulgate regulations governing funding of fixed-contribution multi-employer plans to assure that such plans are provided with sufficient assets to cover benefits under the plan. In promulgating such regulations, the Secretary is required to set a funding period that will actuarially reflect an adequate basis for funding the plan's benefit commitments and which takes into account the particular situation pertaining to the plan, industry, and circumstances involved. In no event is the Secretary authorized to prescribe a funding period for a fixed-contribution multi-employer plan which is less than 40 years, and no such plan is permitted to increase benefits beyond a point for which the fixed-contribution rate would be actuarially inadequate unless such rate is increased commensurately.

The Secretary may determine also that an employer's withdrawal from a multi-employer plan will significantly reduce the rate of aggregate contributions to the plan. He may then require the fund to be allocated between the nonworking and working participants, and treat the nonworkers' share of the fund as terminated for insurance purposes, and the remaining portion of the fund as a new one for funding, variances, and insurance purposes.

TITLE III—VOLUNTARY PORTABILITY PROGRAM FOR VESTED PENSIONS

*Program established*

Section 301. There is established a voluntary program for portability of vested pension credits. The program will be administered by and under the Secretary's direction and designed to facilitate the voluntary transfer of vested credits between registered plans. Plans registered under the Act may voluntarily apply for membership in the program and upon approval be issued a certificate of membership by the Secretary.

*Acceptance of deposits*

Section 302. Upon request of a plan participant, plans which are members of this program are required to pay, to a central portability fund administered by the Secretary, monies representing the value of the participants' vested rights when he is separated from the plan prior to retirement. The Secretary will prescribe the terms and circumstances of deposits to be made.

*Special fund*

Section 303. The Act establishes a Voluntary Portability Program Fund under the supervision of the Secretary into which payments will be made in accordance with regulations prescribed by the Secretary under the portability program. The Secretary shall be the trustee of the fund, and shall administer the fund and report to the Congress annually of the fund's operations and fiscal status. The Secretary is authorized to deposit the amounts received in financial institutions insured by the FDIC or FSLIC but not more than 10% in any one financial institution.

*Individual accounts*

Section 304. The Fund would establish individual accounts for each participant with respect to whom it has received monies under the portability program.

*Payments from individual accounts*

Section 305. At the request of a participant transferring into a new plan, the Secretary is required to pay out of his account the accumulated amounts to purchase pension credits from the new plan which are actuarially equivalent. Unless the monies in a participant's account have been transferred to another employer's plan at the participant's request, the Secretary is required to use the monies in the participant's account to purchase a single-premium life annuity from a qualified life insurance carrier when the participant reaches age 65.

*Technical assistance*

Section 306. The Secretary is authorized to furnish technical assistance to unions, administrators, and all others affected by this Act who wish to develop portability or reciprocity arrangements of their own.

TITLE IV—PLAN TERMINATION INSURANCE

*Program established*

Section 401. There is established a Private Pension Plan Termination Insurance Program administered by the Secretary.

*Conditions of insurance*

Section 402. The insurance program insures participants against losses of vested benefits arising from plan termination. Vested rights acquired prior the effective date of the Act or which exceed the minimum vesting requirements provided for by the Act are not insured.

The amount of vested benefit insurance is limited to 50% of highest average monthly wage of participants earned over a five-year period or $500 monthly, whichever is the lesser.

No insurance shall be paid if the plan is terminated less than three years from date of establishment or registration unless the Secretary determines that a registered plan

was otherwise in substantial compliance with Act and that the reserve position of the insurance program will not be adversely affected.

Insurance will not cover vested rights created by any plan amendment which took effect less than three years prior to plan termination.

No coverage is extended to participants who own 10% or more of employer voting stock.

*Assessment and premiums*

Section 403. Plans shall pay an initial uniform assessment to be prescribed by the Secretary to cover administrative costs of the program. The Secretary shall prescribe an annual premium rate based upon unfunded vested liabilities. For the first three years that there are unfunded vested liabilities subject to insurance, the insurance premium shall not exceed 0.2% of the plan's unfunded vested liabilities. After the initial three-year period, the Secretary may prescribe an annual rate based upon experience, and unless Congress objects within 60 days, the new premium shall become effective.

The Secretary is required to consult with appropriate private and government agencies on matters relating to the assessment and premium rates before prescribing rates.

*Payment of insurance*

Section 404. Insured plans must receive authority from the Secretary to terminate, and the Secretary must determine that statutory requirements have been complied with and that the prospective termination is not designed to avoid or circumvent the Act.

The insurance to be paid shall be the difference between the plan's assets and unfunded vested benefits owed at the time of plan termination.

*Recovery*

Section 405. Where employers in terminated plans are not insolvent, they may be liable for reimbursement of a portion of insurance benefits paid. The liability of the employer is to be based on the ratio of the plan's unfunded vested liabilities to the employer's net worth, and the employer is required to reimburse the Secretary for that percentage of the unfunded vested liabilities which is represented by the foregoing ratio.

The Secretary shall make arrangements with employers on equitable terms for the reimbursement of insurance paid.

*Pension benefit insurance fund*

Section 406. Within the Treasury Department, there is established a fund for the deposit of premiums, assessments, etc., made under the Act and for payment of such claims thereunder.

TITLE V—DISCLOSURE AND FIDUCIARY STANDARDS

The new Disclosure and Fiduciary Requirements of this Act are accomplished by amendment to the Welfare and Pension Plans Disclosure Act. (WPPDA).

*Disclosure*

Section 501. Annual reports required to be filed are required to be accompanied by a certificate designating the Secretary as agent for service of process in any action arising under this Act.

Section 505. Plan descriptions under this Act are required to be comprehensive and written in a language and manner calculated to be understood by the average participant. In addition, the prior filing requirements are revised to authorize plan amendments to be filed in accordance with regulations prescribed by the Secretary. Heretofore, plan amendments had to be filed within 60 days after they were effective.

Section 506. There are two significant changes to the WPPDA made by this section. The first is a new requirement that the annual financial report must include an opinion of the plan's financial condition by an independent accountant based upon the results of an annual audit. Second, plans must include in their reports more detailed financial information, particularly in connection with party-in-interest transactions, and more detailed actuarial information relating to the plan's funding method and its overall financial soundness.

Section 507. The requirements of the WPPDA relating to the furnishing of reports and information to employees is substantially broadened to require administrators to furnish to every participant upon his enrollment in the plan a summary of the plan's important provisions written in a manner calculated to be understood by the average participant (this requirement covers major amendments as well), including an explanation of a participant's rights and obligations under the plan and the circumstances which may disqualify him from benefits, and to furnish to participants every three years a revised, up-to-date summary of the plan's important provisions (including major amendments).

Additionally, the plan administrator must furnish to participants and beneficiaries, upon request, copies of the plan description, annual report, or bargaining agreement, trust agreement, contract, or instrument under which the plan is established and operated. The plan administrator may make a reasonable charge to cover the costs of such copies.

Plan administrators are also required to furnish participants with notices of any vesting or funding variation the plan has received under other provisions of the Act.

Section 508. Amends Section 14 of the WPPDA to restructure the Advisory Council on Employee Welfare and Pension Benefit Plans so that it will serve as an advisory council for both the WPPDA and the Retirement Income Security for Employees Act. The Advisory Council is expanded from its present number of 13 members to 19 members. New permanent categories of membership are added to include the fields of actuarial counseling, investment counseling, and accounting. The period of advisory council meetings is changed from its required twice a year to meetings of at least four times a year.

*Fiduciary standards*

Section 509. Adds new Section 15 to the WPPDA which establishes fiduciary standards for employee pension and welfare plans.

In general, requires plans to be established pursuant to a trust agreement and requires plan funds to be treated as a trust for the exclusive purpose of (1) providing benefits to participants and their beneficiaries and (2) paying reasonable administrative expenses.

Requires a fiduciary (i.e. a person who is responsible for handling plan funds) to act solely in the interests of participants and beneficiaries and as a prudent man in a similar situation and other like conditions would act. The fiduciary must adhere to trust terms which are consistent with the Act and to refrain from transactions where his personal interests would conflict with the interests of the participants and beneficiaries. However, transactions which are otherwise prohibited may be permitted by the Secretary if he finds that the participants' interests would be served by such action. A fiduciary is prohibited from investing more than 10% of a pension fund's assets in securities of the employer.

In general, fiduciaries may be reasonably compensated and entitled to receive benefits which belong to them by reason of being participants in a plan and may also make certain loans to participants or beneficiaries or make reasonable arrangements with parties-in-interest for office space or other services.

Any fiduciary who breaches his trust is personally liable for losses resulting from such breach, and co-fiduciaries are jointly and severally liable except that a co-fiduciary may avoid liability by objecting promptly to any action which may constitute a breach of trust.

Exculpatory clauses in trust agreements are prohibited; however, fiduciaries are permitted to allocate specific responsibilities among themselves, and, thereby, subject to approval by the Secretary, limit the responsibility of each fiduciary.

The bill further prohibits any person who has been convicted of certain specified crimes from serving as an administrator, officer, trustee, employee, or consultant, of or with respect to a plan, for five years following his conviction or release from imprisonment, unless the Secretary determines that a waiver is justified.

Finally, the bill requires all investments and deposits of plan funds to be made in the name of the fund or its nominee and prohibits employees of either the employer or an employee organization from receiving commissions, or brokerage fees with respect to plan investments; and provides for a transitional period as determined by the Secretary for a plan to dispose of conflict-in-interest investments.

TITLE VI—ENFORCEMENT

Section 601. The Secretary is empowered to petition the federal courts to compel a pension or profit-sharing-retirement plan to comply with the Act or effect recoveries of monies which may be due under the Act.

Sections 602, 603, 604, and 605. When the Secretary has reason to believe that a pension, profit-sharing, or other employee benefit plan is violating the Act or the plan's governing documents, he may seek relief in the federal courts to compel the return of assets to the fund, to require payments to be made, to require the removal of a fiduciary, and to obtain other appropriate relief. Plan participants also may seek relief in federal and state courts against violations committed by a fiduciary, including his removal from office. They may also seek relief to recover benefits required to be paid under the plan in the same courts. The Secretary has the right to remove an action pending in a state court to the federal courts for relief provided under this Act.

Sections 607 and 608. Administrators and fiduciaries have the right to obtain judicial review of the actions of the Secretary. The bill provides a statute of limitations of five years for actions arising under the Act.

Section 609. Thist Act supersedes state laws covering the same matters. However, the Act does not exempt or relieve any person from complying with any state law regulating insurance, banking, and related matters, and does not remove state jurisdiction over plans not subject to the Act. State courts are not prevented from asserting jurisdiction in compelling the accounting of a fiduciary or requiring clarification of the plan. The Secretary or a plan participant may remove such a case from the state to the federal court if it involves the applicability of the Act.

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S. 3598

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That this Act may be cited as the "Retirement Income Security for Employees Act."

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FINDINGS AND DECLARATION OF POLICY

SEC. 2. (a) The Congress finds that private pension, and other employee benefit plans and programs in the United States are intrinsically woven into the working and retirement lives of American men and women; that such plans and programs have become firmly rooted into our economic and social structure; that their operational scope and economic impact is interstate and increasingly affecting more than thirty million worker participants throughout the United States; that the pension assets of approximately $135,000,000,000, accelerating at more than $10,000,000,000 annually, represent the largest fund of virtually unregulated assets in the United States; that the growth in size, scope, and numbers of employee benefit plans is continuing rapidly and substantially; that Federal authority over the establishment, administration, and operations of these plans is fragmented and ineffective to secure the fulfillment of purpose and protection of retirement and welfare benefits due to the workers covered and affected; that deficient and inadequate provisions contained in a number of such plans are directly responsible for hardships upon working men and women who are not realizing their expectations of pension benefits upon retirement; that there have been found to be serious consequences to such workers covered by these plans directly attributable to inadequate or nonexistent funding of assets necessary to pay employee benefits, inadequate or nonexistent vesting provisions, lack of portability to permit the transfer of earned credits by employees from one employment to another; that terminations of plans beyond the control of employees, without necessary and adequate funding for benefit payments, has deprived employees and their dependents of earned benefits; that employee participants have not had sufficient information concerning their rights and responsibilities under the plans, resulting in loss of benefits without knowledge of same; that the lack of minimum standards of conduct required of fiduciaries, administrators, and trustees has jeopardized the adequate protection of employee benefits; and that it is therefore desirable, in the interests of employees and their beneficiaries, and in the interest of the free flow of commerce, that minimum standards be prescribed to assure that private pension and employee benefit plans be equitable in character and financially sound and properly administered.

(b) It is the declared policy of this Act to protect interstate commerce, and the equitable interests of participants in private pension plans and their beneficiaries, by improving the scope, administration, and operation of such plans, by requiring pension plans to vest benefits in employees after equitable periods of services; to meet adequate minimum standards of funding; to prevent the losses of employees' earned credits resulting from change of or separation from employment; to protect vested benefits of employees against loss due to plan termination; and to require more adequate disclosure and reports to participants and beneficiaries of plan administration and operations, including financial information by the plan to the participant, as may be necessary for the employees to have a comprehensive and better understanding of their rights and obligations to receive benefits from the plans in which they are participants; to establish minimum standards of fiduciary conduct, and to provide for more appropriate and adequate remedies, sanctions, and ready access to the courts.

DEFINITIONS

SEC. 3. As used in this Act—

(1) "Secretary" means the Secretary of Labor.

(2) "Office" means the Office of Pension and Welfare Plans Administration.

(3) "Assistant Secretary" means the Assistant Secretary of Labor in charge of the Office of Pension and Welfare Plans Administration.

(4) "State" means any State of the United States, the District of Columbia, Puerto Rico, the Virgin Islands, American Samoa, Guam, Wake Island, the Canal Zone, and Outer Continental Shelf lands defined in the Outer Continental Shelf Lands Act (43 U.S.C. 1331–1343).

(5) "Commerce" means trade, traffic, commerce, transportation, or communication among the several States, or between any foreign country and any State, or between any State and any place outside thereof.

(6) "Industry or activity affecting commerce" means any activity, business, or industry in commerce or in which a labor dispute would hinder or obstruct commerce or the free flow of commerce and includes any activity or industry affecting commerce within the meaning of the Labor-Management Relations Act, 1947, as amended, or the Railway Labor Act, as amended.

(7) "Employer" means any person acting directly as an employer or indirectly in the interest of an employer in relation to a pension or profit-sharing-retirement plan, and includes a group of association of employers acting for an employer in such capacity.

(8) "Employee" means any individual employed by an employer.

(9) "Participant" means any employee or former employee of an employer or any member or former member of an employee organization who is or may become eligible to receive a benefit of any type from a pension or profit-sharing-retirement plan, or whose beneficaries may be eligible to receive any such benefit.

(10) "Beneficiary" means a person designated by a participant or by the terms of a pension or profit-sharing-retirement plan who is or may become entitled to a benefit thereunder.

(11) "Person" means an individual, partnership, corporation, mutual company, joint-stock company, trust, unincorporated organization, association, or employee organization.

(12) "Employee organization" means any labor union or any organization of any kind, or any agency or employee representation committee, association, group, or program, in which employees participate and which exists for the purpose in whole or in part, of dealing with employers concerning a pension or profit-sharing-retirement plan, or other matters incidental to employment relationships; or any employees' beneficiary association organized for the purpose, in whole or in part, of establishing or maintaining such a plan.

(13) The term "fund" means a fund of money or other assets maintained pursuant to or in connection with a pension or profit-sharing-retirement plan, and includes employee contributions withheld but not yet paid to the plan by the employer, or a contractual right pursuant to an agreement with an insurance carrier. The term does not include any assets of an investment company subject to regulation under the Investment Company Act of 1940.

(14) "Pension" means any plan, fund, or program, other than a profit-sharing-retirement plan, which is communicated or its benefits described in writing to employees and which is established or maintained for the purpose of providing for its participants, or their beneficiaries, by the purchase of insurance or annuity contracts or otherwise, retirement benefits.

(15) "Profit-sharing-retirement plan" means a plan established and maintained by an employer to provide for the participation in the profits of the employer by the employees in accordance with a definite predetermined formula for allocating the contributions made to the plan among the participants and for distributing the funds accumulated under the plan upon retirement or death. Such plan may include provisions permitting the withdrawal or distribution of the funds accumulated upon contingencies other than, and in addition to, retirement and death.

(16) "Registered plan" means a pension plan or profit-sharing-retirement plan registered and certified by the Secretary as a plan established and operated in accordance with title I of this Act.

(17) "Money purchase plan" refers to a pension plan in which contributions of the employer and employee (if any) are accumulated with interest, or other income to provide at retirement whatever pension benefits the resulting sum will buy.

(18) The term "administrator" means—

(A) the person specifically so designated by the terms of the pension or profit-sharing-retirement plan, collective bargaining agreement, trust agreement, contract, or other instrument, under which the plan is operated; or

(B) in the absence of such designation, (i) the employer in the case of a pension or profit-sharing-retirement plan established or maintained by a single employer, (ii) the employees organization in the case of such plan established or maintained by an employee organization, or (iii) the association, committee, joint board of trustees, or other similar group of representatives of the parties who established or maintain such plan, in the case of a plan established or

maintained by two or more employers or jointly by one or more employers and one or more employee organizations.

(19) "Initial unfunded liability" means the amount (on the effective date of title II, or the effective date of the establishment of a pension plan or any amendment thereto, whichever is later), by which the assets of the plan are actuarially required to be augmented to insure that the plan is and will remain fully funded.

(20) "Unfunded liability" means the amount on the date when such liability is computed, by which the assets of the plan are actuarially required to be augmented to insure that the plan is and will remain fully funded.

(21) "Fully funded" with respect to any pension plan means that such plan at any particular time has assets actuarially determined, by a person authorized under section 101(b)(1), to be sufficient to provide for the payment of all pension and other benefits to participants then entitled or who may be entitled under the terms of the plan to an immediate or deferred benefit in respect of service rendered by such participants.

(22) "Experience deficiency" with respect to a pension plan means any actuarial deficit, determined at the time of a review of the plan, that is attributable to factors other than the existence of an initial unfunded liability or the failure of any employer to make any contribution required by the terms of the plan or by section 210, except insofar such failure to make a required contribution is treated as an experience deficiency under section 217(a)(1).

(23) "Funding" shall mean payment or transfer of assets into a fund, and shall also include payment to an insurance carrier to secure a contractual right pursuant to an agreement with such carrier.

(24) "Normal service cost" means the annual cost assigned to a pension plan, under the actuarial cost method in use (as of the effective date of title II or the date of establishment of a pension plan after such date), exclusive of any element representing any initial unfunded liability or interest thereon.

(25) "Special payment" means a payment made to a pension plan for the purpose of liquidating an initial unfunded liability or experience deficiency.

(26) "Nonforfeitable right" or "vested right" means a legal claim obtained by a participant or his beneficiary to that part of an immediate or deferred pension benefit, which notwithstanding any conditions subsequent which would affect receipt of any benefit flowing from such right, arises from the participant's covered service under the plan, and is no longer contingent on the participant remaining covered by the plan.

(27) "Covered service" means that period of service performed by a participant for an employer or as a member of an employee organization which is recognized under the terms of the plan or the requirements of part A of title II for purposes of determining a participant's eligibility to receive pension benefits or for determining the amount of such benefits.

(28) "Normal retirement benefit" means that benefit payable under a pension or profit-sharing-retirement plan in the event of retirement at the normal retirement age.

(29) "Normal retirement age" means the normal retirement age under the plan but not later than age 65.

(30) "Pension benefit" means the aggregate, annual, monthly, or other amounts to which the participant will become entitled upon retirement or to which any other person is entitled by virtue of such participant's death.

(31) "Accrued portion of normal retirement benefit" means that amount of benefit which, irrespective of whether the right to such benefit is nonforfeitable, is equal to—

(A) in the case of a profit-sharing-retirement plan or money purchase plan, the total amount credited to the account of a participant;

(B) in the case of a unit benefit-type pension plan, the benefit units credited to a participant; or

(C) in the case of other types of pension plans, that portion of the prospective normal retirement benefit of a participant, which under rule or regulation of the Secretary is determined to constitute the participant's accrued portion of the normal retirement benefit under the appropriate plan.

(32) "Fixed-contribution multi-employer plan" means a collectively-bargained pension plan to which two or more unaffiliated employers are required to contribute, and in which the rate of contribution, but not the amount of pension benefits to be provided under the plan, are specified in the collective-bargaining agreement or agreements.

(33) "Unaffiliated employers" means employers other than those under common ownership or control, or having the relationship of parent-subsidiary, or directly or indirectly controlling or controlled by another employer.

(34) "Qualified insurance carrier" means an insurance carrier subject to regulation and examination by the government of any State, which is determined by rule or regulation of the Secretary to be suitable for the purchase of the single premium life annuity or the annuity with survivorship options authorized under section 305(2).

(35) "Vested liabilities" means the present value of the immediate or deferred pension benefits for participants and their beneficiaries which are nonforfeitable and for which all conditions of eligibility have been fulfilled under the provisions of the plan prior to its termination.

(36) "Unfunded vested liabilities" means that amount of vested liabilities that cannot be satisfied by the assets of the plan, as determined by rule or regulation of the Secretary.

## TITLE I—ORGANIZATION

### PART A—ORGANIZATIONAL STRUCTURE

### POWERS AND DUTIES OF THE SECRETARY

SEC. 101. (a) It shall be the duty of the Secretary—

(1) to promote programs and plans for the establishment, administration, and operations of pension, profit-sharing-retirement, and other employee benefit plans in furtherance of the findings and policies set forth in this Act;

(2) to determine, upon application by a pension or profit-sharing-retirement plan, such plan's eligibility for registration with the Secretary under section 105 and, upon qualification, to register such plan and issue appropriate certificates of registration;

(3) to cancel certificates of registration of pension and profit-sharing-retirement plans registered under section 105, upon determination by the Secretary that such plans are not qualified for such registration;

(4)(A) to direct, administer, and enforce the provisions and requirements of this Act and the Welfare and Pension Plans Disclosure Act, except where such provisions are only enforceable by a private party;

(B) upon reasonable cause, to make appropriate and necessary inquiries to determine violations of the provisions of this Act, or the Welfare and Pension Plans Disclosure Act, or any rule or regulation issued thereunder;

(C) for the purpose of any inquiry provided for in subparagraph (B), the provisions of sections 9 and 10 (relating to the attendance of witnesses and the production of books, papers, and documents) of the Federal Trade Commission Act of September 1, 1914, are hereby made applicable to the jurisdiction, powers, and duties of the Secretary.

(5) to bring civil actions authorized by this Act subject to control and direction of the Attorney General;

(6) to appoint and fix the compensation of such employees as may be necessary for the conduct of his business under this Act in accordance with the provisions of title 5, United States Code, governing appointment in the competitive service, and chapter 51 and subchapter III of chapter 53 of such title relating to classification and General Schedule pay rates, and to obtain the services of experts and consultants as necessary in accordance with section 3109 of title 5, United States Code, at rates for individuals not to exceed the per diem equivalent for GS–18;

(7) to perform such other functions as may be necessary to carry out the purposes of this Act.

(b) The Secretary is authorized to prescribe rules and regulations—

(1) establishing standards and qualifications for persons responsible for performing services under this Act as actuaries and upon application of any such person, to certify whether such person meets the standards and qualifications prescribed;

(2) establishing reasonable fees for the registration of pension and profit-sharing-retirement plans and other services to be performed by him in implementing the provisions of this Act, and all fees collected by the Secretary shall be paid into the general fund of the Tresaury;

(3) establishing reasonable limitations on actuarial assumptions, including, but not limited to, interest rates, mortality, and turnover rates;

(4) such as may be necessary or appropriate to carry out the purposes of this Act, including but not limited to definitions of actuarial, accounting, technical, and other trade terms in common use in the subject matter of this Act and the Welfare and Pensions Plans Disclosure Act; and

(5) governing the form, detail, and inspection of all required records, reports, and documents, the maintenance of books and records, and the inspection of such books and records, as may be required under this Act.

(c)(1) The Secretary is authorized and directed to undertake appropriate studies relating to pension and profit-sharing-retirement plans including but not limited to the effects of this Act upon the provisions and costs of pension and profit-sharing-retirement plans, the role of private pensions in meeting retirement security needs of the Nation, the administration and operation of pension plans, including types and levels of benefits, degree of reciprocity or portability, financial characteristics and practices, methods of encouraging the growth of the private pension system, and advisability of additional coverage under this Act.

(2) The Secretary shall submit annually a report to the Congress covering his activities under this Act during the preceding fiscal year, together with the results of such studies as are conducted pursuant to this Act, or, from time to time, pursuant to other Acts of Congress, and recommendations for such further legislation as may be advisable.

(d) Prior to promulgating rules or regulations, the Secretary shall consult with appropriate departments or agencies of the Federal Government to avoid unnecessary conflicts, duplications, or inconsistency with rules and regulations which may be applicable to such plans under other laws of the United States.

(e) In order to avoid unnecessary expense and duplication of functions among Government agencies, the Secretary may make such arrangements or agreements for cooperation or mutual assistance in the performance of his functions under this Act and the functions of any such agency as he may find to

be practicable and consistent with law. The Secretary may utilize on a reimbursable basis the facilities or services of any department, agency, or establishment of the United States, including services of any of its employees, with the lawful consent of such department, agency, or establishment; and each department, agency, or establishment of the United States is authorized and directed to cooperate with the Secretary, and to the extent permitted by law, to provide such information and facilities as the Secretary may request for his assistance in the performance of his functions under this Act.

APPROPRIATIONS

SEC. 102. There are authorized to be appropriated such sums as may be necessary to enable the Secretary to carry out his functions and duties.

OFFICE OF ADMINISTRATION

SEC. 103. (a) There is hereby established within the Department of Labor an office to be known as the Office of Pension and Welfare Plan Administration. Such Office shall be headed by an Assistant Secretary of Labor who shall be appointed by the President, by and with the advice and consent of the Senate.

(b) It shall be the duty of the Assistant Secretary of Labor under the supervision of the Secretary to exercise such power and authority as may be delegated to him by the Secretary for the administration and enforcement of this Act.

(c) Paragraph 20, of section 5315, title 5, United States Code, is amended by striking "(5)" and inserting in lieu thereof "(6)".

(d) The functions, books, records, and personnel of the Office of Labor Management and Welfare Pension Reports are hereby transferred to the Office of Pension and Welfare Plan Administration.

PART B—COVERAGE, EXEMPTIONS, AND REGISTRATION

COVERAGE AND EXEMPTIONS

SEC. 1004. (a) Except as provided in subsections (b) and (c), titles II, III, and IV of this Act shall apply to any pension plan and any profit-sharing-retirement plan established or maintained by any employer engaged in interstate commerce or any industry or activity affecting interstate commerce or by any employer together with any employee organization representing employees engaged in commerce or in any industry or activity affecting such commerce or by any employee organization representing employees engaged in commerce or in any industry or activity affecting commerce.

(b) Titles II, III, and IV of this Act shall not apply to any pension plan or any profit-sharing-retirement plan if—

(1) such plan is administered by the Federal Government or by the government of a State or by a political subdivision of the same or by any agency or instrumentality thereof;

(2) such plan is administered by a religious organization described under section 501(c) of the Internal Revenue Code of 1954 which is exempt from taxation under the provisions of section 501(a) of such Code;

(3) such plan is established by a self-employed individual for his own benefit or for the benefit of his survivors or established by one or more owner-employers exclusively for his or their benefit or for the benefit of his or their survivors;

(4) such plan covers not more than twenty-five participants;

(5) such plan is established or maintained outside the United States primarily for the benefit of employees who are not citizens of the United States;

(6) such plan is unfunded and is established by an employer primarily for the purpose of providing deferred compensation for a select group of management employees and is declared by the employer as not intended to meet the requirements of section 401(a) of the Internal Revenue Code; or

(7) such plan is established or maintained by an employee organization and is administered and financed solely by contributions from its members.

(c) Title IV and part B of title II shall not apply to profit-sharing-retirement plans or money purchase plans.

(d) Titles V and VI shall apply to any plan covered by the Welfare and Pension Plans Disclosure Act and any pension plan for profit-sharing-retirement plan covered by this Act.

REGISTRATION OF PLANS

SEC. 105. (a) Every administrator of a pension or profit-sharing-retirement plan to which this title applies shall file with the Secretary an application for registration of such plan. Such application shall be in such form and shall be accompanied by such documents as shall be prescribed by regulation of the Secretary. After qualification under subsection (c), the administrator of such plan shall comply with such requirements as may be prescribed by the Secretary to maintain the plan's qualification under this title.

(b) In the case of plans established on or after the effective date of this title, the filing required by subsection (a) shall be made within six months after such plan is established. In the case of plans established prior to the effective date of this title, such filing shall be made within six months after such effective date.

(c) Upon the filing required by subsection (a), the Secretary shall determine whether such plan is qualified for registration under this title, and if the Secretary finds it qualified, he shall issue a certificate of registration with respect to such plan.

(d) If at any time, the Secretary determines that a plan required to qualify under this title, is not qualified or is no longer qualified for registration under this title, he shall notify the administrator, setting forth the deficiency or deficiencies in the plan or in its administration or operations which is the basis for the notification given, and he shall further provide the administrator, the employer of the employees covered by the plan (if not the administrator), and the employee organization representing such employees, if any, a reasonable time within which to remove such deficiency or deficiencies. If the Secretary thereafter determines that the deficiency or deficiencies have been removed, he shall issue or continue in effect the certificate, as the case may be. If he determines that the deficiency or deficiencies have not been removed, he shall enter an order denying or canceling the certificate of registration, and take such further action as may be appropriate under title VI.

(e) A pension or profit-sharing- retirement plan shall be qualified for registration under this section if it conforms to, and is administered in accordance with this Act, the Welfare and Pension Plans Disclosure Act, and in the case of a pension plan subject to title IV of this Act, applies for and maintains plan termination insurance and pays the required assessments and premiums.

REPORTS ON REGISTERED PLANS

SEC. 106. The Secretary may, by regulations, provide for the filing of a single report satisfying the reporting requirements of this Act, and the Welfare and Pension Plans Disclosure Act.

AMENDMENTS OF REGISTERED PLANS

SEC. 107. Where a pension or profit-sharing-retirement plan filed for registration under this title is amended subsequent to such filing, the administrator shall (pursuant to regulations promulgated by the Secretary) file with the Secretary a copy of the amendment and such additional information and reports as the Secretary by regulation may require, to determine the amount of any initial unfunded liability created by the amendment, if any, and the special payments required to liquidate such liability.

CERTIFICATE OF RIGHTS

SEC. 108. The Secretary shall, by regulation, require each pension and profit-sharing-retirement plan to furnish each participant, upon termination of service with a vested right to an immediate or a deferred pension benefit or other vested interest, with a certificate setting forth the benefits to which he is entitled, including, but not limited to the name and location of the entity responsible for payment, the amount of benefits, and the date when payment shall begin. A copy of each such certificate shall be filed with the Secretary. Such certificate shall be deemed prima facie evidence of the facts and rights set forth in such certificate.

TITLE II—VESTING AND FUNDING REQUIREMENTS

PART A—VESTING REQUIREMENTS

ELIGIBILITY

SEC. 201. No pension or profit-sharing-retirement plan filed for registration under this Act shall require as a condition for eligibility to participate in such plan a period of service longer than six months or an age greater than twenty-one, whichever occurs later.

VESTING SCHEDULE

SEC. 202. (a) All pension or profit-sharing-retirement plans filed for registration under this Act shall provide under the terms of the plan with respect to service on or after the effective date of this title, or by amendment to the terms of the plan or by the establishment of a new plan with respect to service on or after such date, that:

(1) a plan participant who has been in covered service under the plan for a period of eight years is entitled upon termination of service prior to attaining normal retirement age—

(A) in the case of a pension plan, to a deferred pension benefit commencing at his normal retirement age; or

(B) in the case of a profit-sharing-retirement plan, to a nonforfeitable right to his interest in such plan

equal to 30 per centum of the accrued portion of the normal retirement benefit as provided by the plan in respect of such service, or of such interest, respectively, and such entitlement shall increase by 10 per centum per year thereafter of covered service until the completion of fifteen years of covered service after which such participant shall be entitled upon termination of service prior to attaining normal retirement age to a deferred pension benefit commencing at his normal retirement age equal to 100 per centum of the accrued portion of the normal retirement benefit as provided by the plan with respect to such service, or to the full amount of such interest in the profit-sharing-retirement plan;

(2) the pension benefits provided under the terms of a pension plan, and the interest in a profit-sharing-retirement plan referred to in subparagraph (B) of paragraph (1) shall not be capable of assignment or alienation and shall not confer upon an employee, personal representative, or dependent, or any other person, any right or interest in such pension benefits or profit-sharing-retirement plan, capable of being assigned or otherwise alienated; except that the Secretary may by regulation provide for the final disposition of plan assets when beneficiaries cannot be located or ascertained within a reasonable time.

(b) Any participant covered under a plan, for the number of years required for a vested right under this section, shall be entitled to such vested right regardless of whether his years of covered service are continuous, except that a plan may provide that—

(1) three of the eight years required to qualify for the 30 per centum vested right under subsection (a) shall be continuous under standards prescribed under subsection (c), and

(2) service by a participant prior to the age of twenty-one may be ignored in determining eligibility for a vested right under this section, unless such participant or an employer has contributed to the plan with respect to such service.

(c) The Secretary shall prescribe standards, consistent with the purposes of this Act, governing the maximum number of working days, weeks, or months, which shall constitute a year of covered service for purposes of this Act. In no case shall a participant's time worked in any period in which he is credited for a period of service for the purposes of this section, be credited to any other period of time unless the plan so provides.

(d) Notwithstanding any other provision of this Act, a pension or profit-sharing-retirement plan may allow for vesting of pension benefits after a lesser period than is required by this section.

PART B—FUNDING

FUNDING REQUIREMENTS

SEC. 210. (a) Unless a waiver is granted pursuant to part C of this title, every pension plan filed for registration under this Act shall provide for funding, in accordance with the provisions of this part, which is adequate to provide for payment of all pension benefits which may be payable under the terms of the plan.

(b) Provisions in the plan for funding shall set forth the obligation of the employer or employers to contribute both in respect of the normal service cost of the plan and in respect of any initial unfunded liability and experience deficiency. The contribution of the employer, including any contributions made by employees, shall consist of the payments into the plan or fund of—

(1) all normal service costs; and

(2) where the plan has an initial unfunded liability, special payments consisting of equal amounts sufficient to amortize such unfunded liabilities over a term not exceeding:

(A) in the case of an initial unfunded liability existing on the effective date of this title, in any plan established before that date, forty years from such date;

(B) in the case of an initial unfunded liability resulting from the establishment of a pension plan, or an amendment thereto, on or after the effective date of this title, forty years from the date of such establishment or amendment, except that in the event that any such amendment after the effective date of this title results in a substantial increase to any unfunded liability of the plan, as determined by the Secretary, such increase shall be regarded as a new plan for purposes of the funding schedule imposed by this subsection and the plan termination insurance requirements imposed by title IV.

(3) special payments, where the plan has an experience deficiency, consisting of equal annual amounts sufficient to liquidate such experience deficiency over a term not exceeding five years from the date on which the experience deficiency was determined.

(c) Within six months after the effective date of this title or within six months after the date of plan establishment, whichever is later, the plan administrator shall submit a report of an actuary (certified under section 101(b)) stating—

(1) the estimated cost of benefits in respect of service for the first plan year for which such plan is required to register and the formula for computing such cost in subsequent years up to the date of the following report;

(2) the initial unfunded liability, if any, for benefits under the pension plan as of the date on which the plan is required to be registered;

(3) the special payments required to liquidate such unfunded liability and experience deficiencies in accordance with subsection (b); and

(4) the actuarial assumptions used and the basis for using such actuarial assumptions.

(d) The administrator of a registered pension plan shall cause the plan to be reviewed not less than once every five years by a certified actuary and shall submit a report of such actuary stating—

(1) the estimated cost of benefits in respect of service in the next succeeding five-year period and the formula for computing such cost for such subsequent five-year period;

(2) the surplus or the experience deficiency in the pension plan after making allowance for the present value of all special payments required to be made in the future by the employer as determined by previous reports;

(3) the special payments which will liquidate any such experience deficiency over a term not exceeding five years; and

(4) the actuarial assumptions used and the basis for using such actuarial assumptions.

If any such report disclose a surplus in a pension plan, the amount of any future payments required to be made to the fund or plan may be reduced or the amount of benefits may be increased by the amount of such surplus. The reports under this subsection shall be filed with the Secretary by the administrator as part of the annual report required by section 7 of the Welfare and Pension Plans Disclosure Act, at such time that the report under such section 7 is due with respect to the last year of such five-year period.

(e) The Secretary may exempt any plan, in whole or in part, from the requirement that such reports be filed where the Secretary finds such filing to be unnecessary.

DISCONTINUANCE OF PLANS

SEC. 211. (a) Upon complete termination, or substantial termination (as determined by the Secretary), of a pension plan, all contributions by an employer, an employee organization, an employee, or other persons, in respect of the deferred pension benefit prescribed in section 202(a) shall be applied under the terms of the plan as follows—

(1) first, to participants in the plan who have retired prior to the date of such termination and have been receiving benefits under the plan;

(2) second, to those participants in the plan who, on the date of such termination had the right to retire and receive benefits under the plan;

(3) third, to those participants in the plan who had acquired vested rights under the plan prior to termination of the plan but had not reached normal retirement age on the date of such termination; and

(4) fourth, to any other participants in the plan who are entitled to benefits under the plan pursuant to the requirements of section 401(a)(7) of the Internal Revenue Code of 1954.

(b) Upon complete termination, or substantial termination (as determined by the Secretary), an employer, and the employees if the plan so provides, shall be liable to pay all amounts that would otherwise have been required to be paid to meet the funding requirements prescribed by section 210 up to the date of such termination to the insuror, trustee, or administrator of the plan.

(c) Upon complete termination, or substantial termination (as determined by the Secretary) of a profit-sharing-retirement plan, the interests of all participants in such plan shall fully vest.

(d) In any case, the Secretary may approve payment of survivor benefits with priorities equal to those of the employees or former employees on whose service such benefits are based.

PART C—OPTIONAL ELECTION TO DIVIDE PENSION PLAN

SEC. 215. (a) Notwithstanding any other provision of this Act, an existing plan subject to this title may elect, pursuant to regulations, to divide the plan and its trust into two separate plans and trusts or within the same plan and trust, into two separate plan and trust accounts as follows:

(1) the continuing plan or plan and trust account (hereinafter referred to as "continuing plan") which shall be a continuation of the plan as it existed immediately before the effective date of this title and which shall cover those participants who have credited service under such plan as of such date and who elect to remain covered by the provisions of such plan;

(2) the new plan or new plan and trust account (hereinafter referred to as "new plan") which shall cover all new participants and all participants who would be eligible to continue coverage under the continuing plan but who elect to waive such coverage and to participate instead in the new plan.

(b) A plan which elects to make the division permitted by subsection (a) shall—

(1) assure that the new plan conforms in all respects to the vesting provisions of this title but may maintain the continuing plan without regard to the vesting provisions of this title;

(2) assure that contributions to the new plan are made at a rate not less than the contribution to the continuing plan;

(3) assure that the continuing plan shall transfer to the new plan on the effective date of the election assets determined to be actuarially equivalent to the total amount of contributions made to the plan or credited to the participants covered by the new plan with respect to the previous service of such participants before the effective date of the election as provided for in section 215(a)(2).

(c) A plan which elects to make the division permitted by subsection (a) shall provide that—

(1) no new participant shall become covered by the continuing plan after the division is elected by the plan; and

(2) all new participants shall be covered only by the new plan.

(d) All divided plans or plan and trust accounts established or maintained pursuant to the provisions of this section shall conform to all other requirements imposed by this Act and shall be subject to the plan termination insurance provisions of title IV. In accordance with regulations, continuing plans maintained pursuant to the provisions of this section shall insure participants and beneficiaries thereunder against loss of benefits derived from such vested rights as may be provided by such plan and which arise from termination of such plan before it has been fully funded.

(e) Nothing in this section shall limit the obligation of a party to a collective bargaining agreement to bargain collectively, to the extent required by law, with respect to the making of an election pursuant to this section.

PART D—VARIANCES

DEFERRED APPLICABILITY

SEC. 216. Upon a showing that the initial compliance with the vesting or funding requirements of this Act would be unduly burdensome, impractical, or would otherwise adversely affect the interests of the participants

or beneficiaries of a particular plan, the Secretary may defer such applicability for a period not to exceed a total of three years.

VARIANCES FROM FUNDING REQUIREMENTS

SEC. 217. (a) Where upon application and notice to affected or interested parties by the plan administrator, the Secretary determines that—

(1) any employer or employers are unable to make annual contributions to the plan in compliance with the funding requirements (under subsections (a) and (b) of section 210), and he has reason to believe that such required payment for that annual period cannot be made by such employer or employers, the Secretary may waive the annual contribution otherwise required to be paid, and prescribe an additional period of not more than five years for the liquidation of such annual funding deficiency, during which period the funding deficiency shall be liquidated by prescribed equal annual payments. Any funding deficiency permitted under this section shall be treated for the purposes of any actuarial report required under this Act as an experience deficiency under section 210;

(2) no waiver shall be granted unless the Secretary is satisfied after a review of the financial condition of the plan and other related matters that—

(A) such waiver will not adversely affect the interests of participants or beneficiaries of such plan; or

(B) will not impair the capability of the Pension Benefit Insurance Fund to equitably underwrite vested benefit losses in accordance with title IV.

(3) waivers pursuant to this provision shall not exceed five consecutive annual waivers.

(b) Where a plan has been granted five consecutive waivers pursuant to subsection (a), the Secretary may—

(1) order the merger or consolidation of the deficiently-funded plan with such other plan or plans of the contributing employer or employers in a manner that will result in future compliance with the funding requirements of part B of title II of this Act without adversely affecting the interests of participants and beneficiaries in all plans which may be involved;

(2) where necessary to protect the interests of participants or beneficiaries, or to safeguard the capability of the Pension Benefit Insurance Fund to equitably underwrite vested benefit losses, under title IV, order plan termination in accordance with such conditions as the Secretary may prescribe; or

(3) take such other action as may be necessary to fulfill the purposes of this Act.

(c) No amendments increasing plan benefits shall be permitted during any period in which a funding waiver is in effect.

(d) (1) Notwithstanding the requirements of part B of title II of this Act the Secretary shall by rule or regulation prescribe alternative funding requirements for fixed-contribution multi-employer plans which will assure sufficient assets to cover the plan's benefit commitments.

(2) The period of time provided to fund such fixed-contribution multi-employer plans shall be a period which will actuarially assure that such plan has adequate assets to meet the plan's benefit commitments, and which reflects the particular circumstances affecting the plan, industry, or other pertinent factors, except that no period prescribed by the Secretary shall be less than forty years.

(3) No fixed-contribution multi-employer plan shall increase benefits beyond a level for which the fixed contributions made to the plan would be actuarially determined to be inadequate unless the fixed contribution rate is commensurately increased.

(e) Where upon application and notice to affected or interested parties by the plan administrator of a pension plan funded by the contributions of two or more unaffiliated employers, the Secretary determines that the withdrawal from the plan by any employer or employers has or will result in a significant reduction in the rate of aggregate contributions to the plan, the Secretary may take the following steps:

(1) require the plan fund to be equitably allocated between those participants no longer working in covered service under the plan as a result of their employer's withdrawal, and those participants who remain in covered service under the plan;

(2) treat that portion of the plan fund allocable under (1) to participants no longer in covered service, as a terminated plan for the purposes of the plan termination insurance provisions of title IV; and

(3) treat that portion of the plan fund allocable to participants remaining in covered service as a new plan for purposes of the funding standards imposed by part B of title II of this Act, any variance granted by this section, and the plan termination insurance provisions of title IV.

## TITLE III—VOLUNTARY PORTABILITY PROGRAM FOR VESTED PERSONS

PROGRAM ESTABLISHED

SEC. 301. (a) There is hereby established a program to be known as the "Voluntary Portability Program for Vested Pensions" (hereinafter referred to as the "Portability Program"), which shall be administered by and under the direction of the Secretary. The Portability Program shall facilitate the voluntary transfer of vested credits between registered pension or profit-sharing-retirement plans. Nothing in this title or in the regulations issued by the Secretary hereunder shall be construed to require participation in such Portability Program by a plan as a condition of registration under this Act.

(b) Pursuant to regulations issued by the Secretary, plans registered under this Act may apply for membership in the Portability Program, and, upon approval of such application by the Secretary, shall be issued a certificate of membership in the Portability Program (plans so accepted shall be hereinafter referred to as "member plans").

ACCEPTANCE OF DEPOSITS

SEC. 302. A member plan shall, pursuant to regulations prescribed by the Secretary, pay, upon request of the participant, to the fund established by section 303, a sum of money equal to the current discounted value of the participants' vested rights under the plan, which are in settlement of such vested rights, when such participant is separated from employment covered by the plan before the time prescribed for payments to be made to him or to his beneficiaries under the plan. The fund is authorized to receive such payments, on such terms as the Secretary may prescribe.

SPECIAL FUND

SEC. 303. (a) There is hereby created a fund to be known as the Voluntary Portability Program Fund (hereinafter referred to as the "Fund"). The Secretary shall be the trustee of the Fund. Payments made into the Fund in accordance with regulations prescribed by the Secretary under section 302 shall be held and administered in accordance with this title.

(b) With respect to such Fund, it shall be the duty of the Secretary to—

(1) administer the Fund;

(2) report to the Congress not later than the first day of April of each year on the operation and the status of the Fund during the preceding fiscal year and on its expected operation and status during the current fiscal year and the next two fiscal years and review the general policies followed in managing the Fund and recommend changes in such policies, including the necesssary changes in the provisions of law which govern the way in which the Fund is to be managed; and

(3) after amounts needed to meet current and anticipated withdrawals are set aside, deposit the surplus in interest-bearing accounts in any bank the deposits of which are insured by the Federal Deposit Insurance Corporation or savings and loan association in which the accounts are insured by the Federal Savings and Loan Insurance Corporation. In no case shall such deposits exceed 10 per centum of the total of such surplus, in any one bank, or savings and loan association.

INDIVIDUAL ACCOUNTS

SEC. 304. The Secretary shall establish and maintain an account in the Fund for each participant for whom the Secretary receives payment under section 302. The amount credited to each account shall be adjusted periodically, as provided by the Secretary pursuant to regulations to reflect change in the financial condition of the Fund.

PAYMENTS FROM INDIVIDUAL ACCOUNTS

SEC. 305. Amounts credited to the account of any participant under this title shall be paid by the Secretary to—

(1) a member plan, for the purchase of credits having at least an equivalent actuarial value under such plan, on the request of such participant when he becomes a participant in such member plans; or

(2) a qualified insurance carrier selected by a participant who has attained the age of sixty-five, for the purchase of a single premium life annuity in an amount having a present value equivalent to the amount credited to such participant's account, or in the event the participant selects an annuity with survivorship options, an amount determined by the Secretary to be fair and reasonable based on the amount in such participant's account.

TECHNICAL ASSISTANCE

SEC. 306. The Secretary shall provide technical assistance to employers, employee organizations, trustees, and administrators of pension and profit-sharing-retirement plans in their efforts to provide greater retirement protection for individuals who are separated from employment covered under such plans. Such assistance may include, but is not limited to (1) the development of reciprocity arrangements between plans in the same industry or area, and (2) the development of special arrangements for portability of credits within a particular industry or area.

## TITLE IV—PLAN TERMINATION INSURANCE

PROGRAM ESTABLISHED

SEC. 401. There is hereby established a program to be known as the "Private Pension Plan Termination Insurance Program (hereinafter referred to as the "Insurance Program"), which shall be administered by and under the direction of the Secretary.

CONDITIONS OF INSURANCE

SEC. 402. (a) The insurance program shall insure participants and beneficiaries of those plans registered under this Act against loss of benefits derived from vested rights which arise from the termination of such plans.

(b) The rights of participants and beneficiaries of a registered pension plan shall be insured under the insurance program only to the extent that—

(1) such rights were earned after the effective date of this Act;

(2) such rights are not vested after a lesser period than is required by this Act;

(3) such rights as provided for in the plan do not exceed: (A) in the case of a right to a monthly retirement or disability benefit for the employee himself, the lesser of 50 per centum of the average monthly wage he received from the contributing employer in the five-year period after the registration date

of the plan for which his earnings were its greatest, or $500 a month; (B) in the case of a right of one or more dependents or members of the participant's family, or in the case of a right to a lump-sum survivor benefit on account of the death of a participant, an amount no greater than the amount determined under clause (A);

(4) the plan is terminated more than three years after the date of its establishment or its initial registration with the Secretary, except that the Secretary may in his discretion authorize insurance payments in such amounts as may be reasonable to any plan terminated in less than three years after the date of its initial registration with the Secretary where (A) such plan has been established and maintained for more than three years prior to its termination, (B) the Secretary is satisfied that during the period the plan was unregistered, it was in substantial compliance with the provisions of this Act, and (C) such payments will not prevent equitable underwriting of losses of vested benefits arising from plan terminations otherwise covered by this title;

(5) such rights were created by a plan amendment which took effect more than three years immediately preceding termination of such plan; and

(6) such rights do not accrue to the interest of a participant who is the owner of 10 per centum or more of the voting stock of the employer contributing to the plan, or of the same percentage interest in a partnership contributing to the plan.

ASSESSMENTS AND PREMIUMS

SEC. 403. (a) Upon registration with the Secretary, each plan shall pay a uniform assessment to the insurance program as prescribed by the Secretary to cover the administrative costs of the insurance program.

(b) (1) Each registered pension plan shall pay an annual premium for insurance at uniform rates established by the Secretary based upon the amount of unfunded vested liabilities subject to insurance under section 402.

(2) For the three-year period immediately following the effective date of this title, such premium shall not exceed 0.2 per centum of a plan's actuarially-projected unfunded vested liabilities subject to insurance under section 402.

(3) (A) The Secretary is authorized to prescribe different uniform premium rates after the initial three-year period based upon experience and other relevant factors.

(B) Any new rates prescribed by the Secretary shall be effective at the end of the first period of sixty calendar days of continuous session of the Congress after the date on which the proposed rates are published in the Federal Register, unless between the date of such publication and the end of the sixty-day period, either House passes a resolution stating in substance that that House does not favor the proposed rate change.

(C) For the purpose of subparagraph (B)—

(i) continuity of a session is broken only by an adjournment sine die; and

(ii) the days on which either House is not in session because of an adjournment of more than three days to a day certain are excluded in the computation of the sixty-day period.

(c) Assessments and premiums referred to in this section shall be prescribed by the Secretary only after consultation with appropriate Government agencies and private persons with expertise on matters relating to assessment and premium structures in insurance and related matters, and after notice to all interested persons and parties.

PAYMENT OF INSURANCE

SEC. 404. (a) No plan insured under this title shall terminate without approval of the Secretary. The Secretary shall not approve a plan termination unless he is satisfied that the requirements of this Act and those of the Welfare and Pension Plans Disclosure Act have been complied with and that such termination is not designed to avoid or circumvent the purposes of this Act.

(b) As determined by the Secretary, subject to the conditions specified in section 402, the amount of insurance payable under the insurance program shall be the difference between the realized value of the plan's assets and the amount of vested liabilities under the plan.

RECOVERY

SEC. 405. (a) Where the employer or employers contributing to the terminating plan or who terminated the plan are not insolvent (within the meaning of section 1(19) of the Bankruptcy Act), such employer or employers shall be liable to reimburse the insurance program for any insurance benefits paid by the program to the beneficiaries of such terminated plan to the extent provided in this section.

(b) An employer, determined by the Secretary to be liable for reimbursement under subsection (a), shall be liable to pay a percentage of the terminated plan's unfunded vested liabilities equal to 100 per centum less the percentage of the ratio of the plan's unfunded vested liabilities to the net worth of the employer.

(c) The Secretary is authorized to make arrangements with employers, liable under subsection (a) for reimbursement of insurance paid by the Secretary including arrangements for deferred payment on such terms and for such periods as are deemed equitable and appropriate.

PENSION BENEFIT INSURANCE FUND

SEC. 406. (a) There is hereby created within the Treasury a separate fund for pension benefit insurance to be known as the Pension Benefit Insurance Fund (hereafter in this section called the fund) which shall be available to the Secretary without fiscal year limitation for the purposes of this title.

(b) All amounts received as premiums, assessments, or fees, and any other moneys, property, or assets derived from operations in connection with this title shall be deposited in the fund.

(c) All claims, expenses, and payments pursuant to operation of the program under this title shall be paid from the fund. From time to time, and at least at the close of each fiscal year, the Secretary shall pay from the funds into the Treasury as miscellaneous receipts interest on the cumulative amount of appropriations provided as capital to the fund, less the average undisbursed cash balance in the fund during the year. The rate of such interest shall be determined by the Secretary of the Treasury, taking into consideration the average market yield during the month preceding each fiscal year on outstanding marketable Treasury obligations. Interest payments may be deferred with the approval of the Secretary of the Treasury, but any interest payments so deferred shall themselves bear interest.

(d) All moneys of the fund, except appropriated funds, may be invested in obligations of the United States or in obligations guaranteed as to principal and interest by the United States.

TITLE V—DISCLOSURE AND FIDUCIARY STANDARDS

SEC. 501. In addition to the filing requirements of the Welfare and Pension Plans Disclosure Act, it shall be a condition of compliance with section 7 of such Act that each annual report hereinafter filed under that section shall be accompanied by a certificate or certificates in the name of and on behalf of the plan, the administrator, and any employer or employee organization participating in the establishment of the plan, designating the Secretary as agent for service of process on the persons and entities executing such certificate or certificates in any action arising under the Welfare and Pension Plans Disclosure Act or this Act.

SEC. 502. (a) Section 3 of the Welfare and Pension Plans Disclosure Act (72 Stat. 997) is amended by adding at the end thereof the following new paragraphs:

"(14) The term 'relative' means a spouse, ancestor, descendent, brother, sister, son-in-law, daughter-in-law, father-in-law, mother-in-law, brother-in-law, or sister-in-law.

"(15) The term 'administrator' means—

"(A) the person specifically so designated by the terms of the plan, collective-bargaining agreement, trust agreement, contract, or other instrument, under which the plan is operated; or

"(B) in the absence of such designation (i) the employer in the case of an employee benefit plan established or maintained by a single employer, (ii) the employee organization in the case of a plan established or maintained by an employee organization, or (iii) the association, committee, joint board of trustees, or other similar group of representatives of the parties who established or maintained the plan, in the case of a plan established or maintained by two or more employers or jointly by one or more employers and one or more employee organizations.

"(16) The term 'employee benefit plan' or 'plan' means an employee welfare benefit plan or an employee pension benefit plan or a plan providing both welfare and pension benefits.

"(17) The term 'employee benefit fund' or 'fund' means a fund of money or other assets maintained pursuant to or in connection with an employee benefit plan and includes employee contributions withheld but not yet paid to the plan by the employer. The term does not include: (A) any assets of an investment company subject to regulation under the Investment Company Act of 1940; (B) premium, subscription charges, or deposits received and retained by an insurance carrier or service or other organization, except for any separate account established or maintained by an insurance carrier.

"(18) The term 'separate account' means an account established or maintained by an insurance company under which income, gains, and losses, whether or not realized, from assets allocated to such account, are, in accordance with the applicable contract, credited to or charged against such account without regard to other income, gains, or losses of the insurance company.

"(19) The term 'adequate consideration' when used in section 14 means either (A) at the price of the security prevailing on a national securities exchange which is registered with the Securities and Exchange Commission, or (B) if the security is not traded on such a national securities exchange, at a price not less favorable to the fund than the offering price for the security as established by the current bid and asked prices quoted by persons independent of the issuer.

"(20) The term 'nonforfeitable pension benefit' means a legal claim obtained by a participant or his beneficiary to that part of an immediate or deferred pension benefit which, notwithstanding any conditions subsequent which would affect receipt of any benefit flowing from such right, arises from the participant's covered service under the plan and is no longer contingent on the participant remaining covered by the plan.

"(21) The term 'covered service' means that period of service performed by a participant for an employer or as a member of an employee organization which is recognized under the terms of the plan or the requirements of the Retirement Income Security for Employees Act for purposes of determining a participant's eligibility to receive pension benefits or for determining the amount of such benefits.

"(22) The term 'pension benefit' means the aggregate, annual, monthly, or other amounts to which a participant will become entitled upon retirement or to which any other person is entitled by virtue of such participant's death.

"(23) The term 'accrued portion of normal retirement benefit' means that amount of benefit which, irrespective of whether the right to such benefit is nonforfeitable, is equal to—

"(A) in the case of a profit-sharing-retirement plan or money purchase plan, the total amount credited to the account of a participant;

"(B) in the case of a unit benefit-type pension plan, the benefit units credited to a participant; or

"(C) in the case of other types of pension plans, that portion of the prospective normal retirement benefit of a participant that pursuant to rule or regulation, under this Act, is determined to constitute the participant's accrued portion of the normal retirement benefit under the appropriate plan.

"(24) The term 'security' has the same meaning as in the Securities Act of 1933 (15 U.S.C. 77(a)).

"(25) The term 'fiduciary' means any person who exercises any power of control, management, or disposition with respect to any moneys or other property of an employee benefit fund, or has authority or responsibility to do so.

"(26) The term 'market value' or 'value' when used in this Act means fair market value where available, and otherwise the fair value as determined pursuant to rule or regulation under this Act."

(b) Paragraph (1) of section 3 of such Act is amended by inserting the words "or maintained" after the word "established".

(c) Paragraph (2) of section 3 of such Act is amended by inserting the words "or maintained" after the word "established".

(d) Paragraph (3) of section 3 of such Act is amended by striking out the word "plan" the first time it appears and inserting in lieu thereof the word "program".

(e) Paragraphs (3), (4), (6), and (7) of section 3 of such Act are amended by striking out the words "welfare or pension" wherever they appear.

(f) Paragraph (13) of section 3 of such Act is amended to read as follows:

"(13) The term 'party in interest' means any administrator, officer, trustee, custodian, counsel, or employee of any employee benefit plan, or a person providing benefit plan services to any such plan, or an employer, any of whose employees are covered by such a plan or any person controlling, controlled by, or under common control with, such employer or officer or employee or agent of such employer or such person, or an employee organization having members covered by such plan, or an officer or employee or agent of such an employee organization, or a relative, partner, or joint venturer or any of the above described persons."

SEC. 503. (a) Section 4(a) of the Welfare and Pension Plans Disclosure Act is amended by striking out the words "welfare or pension", "or employers", and "or organizations" wherever they appear.

(b) Paragraph (3) of section 4(b) of such Act is amended to read as follows:

"(3) Such plan is administered by a religious organization described under section 501(c) of the Internal Revenue Code of 1954 which is exempt from taxation under the provisions of section 501(a) of such Code;"

(c) Paragraph (4) of section 4(b) of such Act is amended by inserting before the period the following: ", except that participants and beneficiaries of such plan shall be entitled to maintain an action to recover benefits or to clarify their rights to future benefits as provided in section 604 of the Retirement Income Security for Employees Act".

(d) Section 4(b) of such Act is further amended by adding at the end thereof the following new paragraph:

"(5) such plan is established or maintained outside the United States primarily for the benefit of employees who are not citizens of the United States."

SEC. 504. (a) Section 5(b) of the Welfare and Pension Plans Disclosure Act is amended to read as follows:

"(b) The Secretary may require the filing of special terminal reports on behalf of an employee benefit plan which is winding up its affairs, so long as moneys or other assets remain in the plan. Such reports may be required to be filed regardless of the number of participants remaining in the plan and shall be in such form and filed in such manner as the Secretary may prescribe."

(b) Section 5 of such Act is further amended by adding at the end thereof the following new subsection:

"(c) The Secretary may by regulation provide for the exemption from all or part of the reporting and disclosure requirements of this Act of any class or type of employee benefit plans if the Secretary finds that the application of such requirements to such plans is not required in order to implement the purposes of this Act."

SEC. 505. Section 6 of the Welfare and Pension Plans Disclosure Act is amended to read as follows:

"SEC. 6. (a) A description of any employee benefit plan shall be published as required herein within ninety days after the establishment of such plan or when such plan becomes subject to this Act.

"(b) The description of the plan shall be comprehensive and shall include the name and type of administration of the plan; the name and address of the administrator; the schedule of benefits; a description of the provisions providing for vested benefits written in a manner calculated to be understood by the average participant; the source of the financing of the plan and identity of any organization through which benefits are provided; whether records of the plan are kept on a calendar year basis, or on a policy or other fiscal year basis, and if on the latter basis, the date of the end of such policy or fiscal year; the procedures to be followed in presenting claims for benefits under the plan and the remedies available under the plan for the redress of claims which are denied in whole or in part. Amendments to the plan reflecting changes in the data and information included in the original plan, other than data and information also required to be included in annual reports under section 7, shall be included in the description on and after the effective date of such amendments. Any change in the information required by this subsection shall be reported in accordance with regulations prescribed by the Secretary."

SEC. 506. (a) Subsection (a) of section 7 of the Welfare and Pension Plans Disclosure Act is amended by adding the number "(1)" after the letter "(a)", and by striking out that part of the first sentence which precedes the word "if" the first time it appears and inserting in lieu thereof the words "An annual report shall be published with respect to any employee benefit plan if the plan provides for an employee benefit fund subject to section 14 of this Act or".

(b) Section 7(a)(1) of such Act is further amended by striking out the word "investigation" and inserting in lieu thereof the words "notice and opportunity to be heard", by striking out the words "year or if" and inserting in lieu thereof the words "policy or fiscal year on which", adding a period after the word "kept", and striking out all the words following the word "kept".

(c) Section 7(a) of such Act is further amended by adding the following paragraphs:

"(2) If some or all of the benefits under the plan are provided by an insurance carrier or service or other organization, such carrier or organization shall certify to the administrator of such plan within one hundred and twenty days after the end of each calendar, policy, or other fiscal year, as the case may be, such information as determined by the Secretary to be necessary to enable such administrator to comply with the requirements of this Act.

"(3) The administrator of an employee benefit plan shall cause an audit to be made annually of the employee benefit fund established in connection with or pursuant to the provisions of the plan. Such audit shall be conducted in accordance with accepted standards of auditing by an independent certified or licensed public accountant, but nothing herein shall be construed to require such an audit of the books or records of any bank, insurance company, or other institution providing insurance, investment, or related function for the plan, if such books or records are subject to periodic examination by any agency of the Federal Government or the government of any State. The auditor's opinion and comments with respect to the financial information required to be furnished in the annual report by the plan administrator shall form a part of such report."

(d) Sections 7 (b) and (c) of such Act are amended to read as folows:

"(b) A report under this section shall include—

"(1) the amount contributed by each employer: the amount contributed by the employees; the amount of benefits paid or otherwise furnished; the number of employees covered; a statement of assets, liabilities, receipts, and disbursements of the plan; a detailed statement of the salaries and fees and commissions charged to the plan, to whom paid, in what amount, and for what purposes; the name and address of each fiduciary, his official position with respect to the plan, his relationship to the employer of the employees covered by the plan, or the employee organization, and any other office, position, or employment he holds with any party in interest;

"(2) a schedule of all investments of the fund showing as of the end of the fiscal year:

"(A) the aggregate cost and aggregate value of each security, by issuer,

"(B) the aggregate cost and aggregate value, by type or category, of all other investments, and separately identifying (i) each investment, the value of which exceeds $100,000 or 3 per centum of the value of the fund and (ii) each investment in securities or properties of any person known to be a party in interest;

"(3) a schedule showing the aggregate amount, by type of security, of all purchases, sales, redemptions, and exchanges of securities made during the reporting period; a list of the issuers of such securities; and in addition, a schedule showing, as to each separate transaction with or without respect to securities issued by any person known to be a party in interest, the issuer, the type and class of security, the quantity involved in the transaction, the gross purchase price, and in the case of a sale, redemption, or exchange, the gross and net proceeds (including a description and the value of any consideration other than money) and the net gain or loss;

"(4) a schedule of purchases, sales, or exchanges during the year covered by the report of investment assets other than securities—

"(A) by type of category of asset the aggregate amount of purchases, sales, and exchanges; the aggregate expenses incurred in connection therewith; and the aggregate net gain (or loss) on sales, and

"(B) for each transaction involving a person known to be a party in interest and for each transaction involving over $100,000 or 3 per centum of the fund, an indication of each asset purchased, sold, or exchanged

(and, in the case of fixed assets such as land, buildings, and leaseholds, the location of the asset); the purchase or selling price; expenses incurred in connection with the purchase, sale, or exchange; the cost of the asset and the net gain (or loss) on each sale; the identity of the seller in the case of a purchase, or the identity of the purchaser in the case of a sale, and his relationship to the plan, the employer, or any employee organization;

"(5) a schedule of all loans made from the fund during the reporting year or outstanding at the end of the year, and a schedule of principal and interest payments received by the fund during the reporting year, aggregated in each case by type of loan, and in addition, a separate schedule showing as to each loan which—

"(A) was made to a party in interest, or

"(B) was in default, or

"(C) was written off during the year as uncollectable, or

"(D) exceeded $100,000 or 3 per centum of the value of the fund,

the original principal amount of the loan, the amount of principal and interest received during the reporting year, the unpaid balance, the identity and address of the loan obligor, a detailed description of the loan (including date of making and maturity, interest rate, the type and value of collateral, and other material terms), the amount of principal and interest overdue (if any) and as to loans written off as uncollectable an explanation thereof;

"(6) a list of all leases with—

"(A) persons other than parties in interest who are in default, and

"(B) any party in interest,

including information as to the type of property leased (and, in the case of fixed assets such as land, buildings, leaseholds, and so forth, the location of the property), the identity of the lessor or lessee from or to whom the plans is leasing, the relationship of such lessors and lessees, if any, to the plan, the employer, employee organization, or any other party in interest, the terms of the lease regarding rent, taxes, insurance, repairs, expenses, and renewal options; if property is leased from persons described in (B) the amount of rental and other expenses paid during the reporting year; and if property is leased to persons described in (A) or (B), the date the leased property was purchased and its cost, the date the propety was leased and its approximate value at such date, the gross rental receipts during the reporting period, the expenses paid for the leased property during the reporting period, the net receipts from the lease, and with respect to any such leases in default, their identity, the amounts in arrears, and a statement as to what steps have been taken to collect amounts due or otherwise remedy the default;

"(7) a detailed list of purchases, sales, exchanges, or any other transactions with any party in interest made during the year, including information as to the asset involved, the price, any expenses connected with the transaction, the cost of the asset, the proceeds, the net gain or loss, the identity of the other party to the transaction and his relationship to the plan;

"(8) if some or all of the assets of a plan or plans are held in a common or collective trust maintained by a bank or similar institution or in a separate account maintained by an insurance carrier, the report shall include a statement of assets and liabilities and a statement of receipts and disbursements of such common or collective trust or separate account and such of the information required under paragraphs (2), (3), (4), (5), (6), and (7) of section 7(b) with respect to such common or collective trust or separate account as the Secretary may determine appropriate by regulation. In such case the bank or similar institution or insurance carrier shall certify to the administrator of such plan or plans, within one hundred and twenty days after the end of each calendar, policy, or other fiscal year, as the case may be, the information determined by the Secretary to be necessary to enable the plan administrator to comply with the requirements of this Act; and

"(9) in addition to reporting the information called for by this subsection, the administrator may elect to furnish other information as to investment or reinvestment of the fund as additional disclosures to the Secretary.

"(c) If the only assets from which claims against an employee benefit plan may be paid are the general assets of the employer or the employee organization, the report shall include (for each of the past five years) the benefits paid and the average number of employees eligible for participation."

(e) Section 7(d) of such Act is amended by striking out the capital "T" in the word "The" the first time it appears in paragraphs (1) and (2) and inserting in lieu thereof a lower case "t".

(f) Section 7(e) of such Act is amended to read as follows:

"(e) Every employee pension benefit plan shall include with its annual report (to the extent applicable) the following information:

"(1) the type and basis of funding,

"(2) the number of participants, both retired and nonretired, covered by the plan,

"(3) the amount of all reserves or net assets accumulated under the plan

"(4) the present value of all liabilities for all nonforfeitable pension benefits and the present value of all other accrued liabilities,

"(5) the ratios of the market value of the reserves and assets described in (3) above to the liabilities described in (4) above.

"(6) a copy of the most recent actuarial report, and

"(A) (i) The actuarial assumptions used in computing the contributions to a trust or payments under an insurance contract, (ii) the actuarial assumptions used in determining the level of benefits, and (iii) the actuarial assumptions used in connection with the other information required to be furnished under this subsection, insofar as any such actuarial assumptions are not included in the most recent actuarial report,

"(B) (i) if there is no such report, or (ii) if any of the actuarial assumptions employed in the annual report differ from those in the most recent actuarial report, or (iii) if different actuarial assumptions are used for computing contributions or payments than are used for any other purpose, a statement explaining same.

"(7) a statement showing the number of participants who terminated service under the plan during the year, whether or not they retain any nonforfeitable pension benefits, their length of service by category, the present value of the total accrued benefits of said participants and the present value of such benefits forfeited, and

"(8) such other information pertinent to disclosure under this subsection as the Secretary may by regulation prescribe."

(g) Section 7 of such Act is further amended by striking out in their entirety subsections (f), (g), and (h).

SEC. 507. (a) Section 8 of the Welfare and Pension Plans Disclosure Act is amended by striking out subsections (a) and (b) in their entirety and by redesignating subsection (c) as subsection (a). The subsection redesignated as subsection (a) is further amended by striking out the words "of plans" after the word "descriptions", striking out the word "the" before the word "annual", and adding the word "plan" before the word "descriptions".

(b) Such section is further amended by adding subsections (b), (c), and (d), to read as follows:

"(b) The administrator of any employee benefit plan subject to this Act shall file with the Secretary a copy of the plan description and each annual report. The Secretary shall make copies of such descriptions and annual reports available for public inspection.

"(c) Publication of the plan descriptions and annual reports required by this Act shall be made to participants and beneficiaries of the particular plan as follows:

"(1) the administrator shall make copies of the plan description (including all amendments or modifications thereto) and the latest annual report and the bargaining agreement, trust agreement, contract, or other instrument under which the plan was established and is operated available for examination by any plan participant or beneficiary in the principal office of the administrator;

"(2) the administrator shall furnish to any plan participant or beneficiary so requesting in writing a fair summary of the latest annual report;

"(3) the administrator shall furnish: (i) to every participant upon his enrollment in the plan and within thirty days after each major amendment to the plan, a summary of the plan's important provisions and requirements of the amendment, whichever is applicable, written in a manner calculated to be understood by the average participant; such explanation shall include a description of the benefits available to the participant under the plan and circumstances which may result in disqualification or ineligibility; and (ii) to every participant every three years (commencing January 1, 1975), a revised, up-to-date summary of the plan's important provisions and major amendments thereto, written in a manner calculated to be understood by the average participant; and (iii) to each plan participant or beneficiary so requesting in writing a complete copy of the plan description (including all amendments or modifications thereto) or a complete copy of the latest annual report, or both. He shall in the same way furnish a complete copy of the bargaining agreement, trust agreement, contract, or other instrument under which the plan is established and operated. In accordance with regulations of the Secretary, an administrator may make a reasonable charge to cover the cost of furnishing such complete copies.

"(d) In the event a plan is provided alternative standards of vesting, funding, or both, pursuant to title II of the Retirement Income Security for Employees Act, the administrator shall provide notice of such action to each participant in a manner calculated to be understood by the average participant, and in such form and detail and for such periods as may be prescribed by the Secretary."

SEC. 508. Section 14 of such Act is amended to read as follows:

"SEC. 14. (a) (1) There is hereby established an Advisory Council on Employee Welfare and Pension Benefit Plans (hereinafter referred to as the 'Council') consisting of nineteen members appointed by the Secretary. Not more than ten members of the Council shall be members of the same political party.

"(2) Members shall be appointed from among persons recommended by groups or organizations which they shall represent and shall be persons qualified to appraise the programs instituted under this Act and the Retirement Income Security for Employees Act.

"(3) Of the members appointed, seven shall be representatives of labor organizations; two shall be representatives of management; one representative each from the fields of insurance, corporate trust, actuarial counseling, investment counseling, and the accounting field; and five representatives shall be appointed from the general public.

"(4) Members shall serve for terms of three years, except that of those first appointed,

six shall be appointed for terms of one year, six shall be appointed for terms of two years, and seven shall be appointed for terms of three years. A member may be reappointed, and a member appointed to fill a vacancy shall be appointed only for the remainder of such term. A majority of members shall constitute a quorum and action shall be taken only by a majority vote of those present.

"(5) Members shall be paid compensation at the rate of $150 per day when engaged in the actual performance of their duties except that any such member who holds another office or position under the Federal Government shall serve without additional compensation. Any member shall receive travel expenses, including per diem in lieu of subsistence as authorized by section 5703 of title 5, United States Code, for persons in the Government employed intermittently.

"(b) It shall be the duty of the Council to advise the Secretary wtih respect to the carrying out of their functions under this Act, and to submit to the Secretary recommendations with respect thereto. The Council shall meet at least four times each year and at such other times as the Secretary requests. At the beginning of each regular session of the Congress, the Secretary shall transmit to the Senate and House of Representatives each recommendation which he has received from the Council during the preceding calendar year and a report covering his activities under the Act for the preceding fiscal year, including full information as to the number of plans and their size, the results of any studies he may have made of such plans and the operation of this Act and such other information and data as he may deem desirable in connection with employee welfare and pension benefit plans.

"(c) The Secretary shall furnish to the Council an executive secretary and such secretarial, clerical, and other services as are deemed necessary to conduct its business. The Secretary may call upon other agencies of the Government for statistical data, reports, and other information which will assist the Council in the performance of its duties."

SEC. 509. The Welfare and Pension Plans Disclosure Act is further amended by renumbering sections 15, 16, 17, and 18 as sections 16, 17, 18, and 19, respectively, and by inserting the following new section immediately after section 14:

"FIDUCIARY STANDARDS

"SEC. 15. (a) Every employee benefit fund established to provide for the payment of benefits under an employee's benefit plan shall be established pursuant to a duly executed trust agreement which shall set forth the purpose or purposes for which such fund is established and the detailed basis on which payments are to be made into and out of such fund. Such fund shall be deemed to be a trust and shall be held for the exclusive purpose of (1) providing benefits to participants in the plan and their beneficiaries and (2) defraying reasonable expenses of administering the plan.

"(b)(1) A fiduciary shall discharge his duties with respect to the fund—

"(A) solely in the interests of the participants and their beneficiaries;

"(B) with the care under the circumstances then prevailing that a prudent man acting in a like capacity and familiar with such matters would use in the conduct of an enterprise of a like character and with like aims; and

"(C) in accordance with the documents and instruments governing the fund insofar as is consistent with this Act, except that (i) any assets of the fund remaining upon dissolution or termination of the fund shall, after complete satisfaction of the rights of all beneficiaries to benefits accrued to the date of dissolution or termination, be distributed ratably to the beneficiaries thereof or, if the trust agreement so provides, to the contributors thereto; and (ii) that in the case of a registered pension or profit-sharing retirement plan, such distribution shall be subject to the requirements of the Retirement Income Security for Employees Act.

"(2) Except as permitted hereunder, a fiduciary shall not—

"(A) lease or sell property of the fund to any person known to be a party in interest;

"(B) lease or purchase on behalf of the fund any property known to be owned by a party in interest;

"(C) deal with such fund in his own interest or for his own account;

"(D) represent any other party with such fund, or in any way act on behalf of a party adverse to the fund or adverse to the interests of its participants or beneficiaries:

"(E) receive any consideration from any party dealing with such fund in connection with a transaction involving the fund;

"(F) loan money or other assets of the fund to any person known to be a party in interest;

"(G) furnish goods, services, or facilities to any person known to be a party in interest;

"(H) permit the transfer of any property of the fund to, or its use by or for the benefit of, any person known to be a party in interest; or

"(I) permit any of the assets of the fund to be held, deposited, or invested outside the United States unless the indicia of ownership remain within the jurisdiction of a United States District Court, except as authorized by the Secretary by rule or regulation. The Secretary may by rule or regulation provide for the exemption of any fiduciary or transaction from all or part of the proscriptions contained in this subsection, when the Secretary finds that to do so is consistent with the purposes of this Act and in the interest of the fund and its participants and beneficiaries. However, no such exemption shall relieve a fiduciary from any other applicable provisions of this Act.

"(c) Nothing in this section shall be construed to prohibit the fiduciary from—

"(1) receiving any benefit to which he may be entitled as a participant or beneficiary in the plan under which the fund was established;

"(2) receiving any reasonable compensation for services rendered, or for the reimbursement of expenses properly and actually incurred, in the performance of his duties with the fund, except that no person so serving who already receives full-time pay from an employer or an association of employers whose employees are participants in the plan under which the fund was established, or from an employee organization whose members are participants in such plan shall receive compensation from such fund, except for reimbursement of expenses properly and actually incurred and not otherwise reimbursed;

"(3) serving in such position in addition to being an officer, employee, agent, or other representative of a party in interest;

"(4) engaging in the following transactions:

"(A) purchasing on behalf of the fund any security which has been issued by an employer whose employees are participants in the plan, under which the fund was established or a corporation controlling, controlled by, or under common control with such employer, except that (i) the purchase of any security is for no more than adequate consideration in money or money's worth, and (ii) that if an employee benefit fund is one which provides primarily for benefits of a stated amount, or an amount determined by an employee's compensation, an employee's period of service, based on fixed contributions which are not geared to the employer's profits, no investment shall be made subsequent to the enactment of this amendment by a fiduciary of such a fund in securities of such an employer or of a corporation controlling, controlled by, or under common control with such employer, if such investment, when added to such securities already held, exceeds 10 per centum of the fair market value of the assets of the fund. Notwithstanding the foregoing, such 10 per centum limitation shall not apply to profit sharing, stock bonus, thrift and savings or other similar plans which explicitly provide that some or all of the plan funds may be invested in securities of such employer or a corporation controlling, controlled by, or under common control with such employer, nor shall said plans be deemed to be limited by any diversification rule as to the percentage of plan funds which may be invested in such securities. Profit sharing, stock bonus, thrift or other similar plans, which are in existence on the date of enactment and which authorize investment in such securities without explicit provision in the plan, shall remain exempt from the 10 per centum limitation until the expiration of one year from the date of enactment of Retirement Income Security for Employees Act. Nothing contained in this subparagraph shall be construed to relieve profit sharing, stock bonus, thrift and saving or other similar plans from any other applicable requirements of this section;

"(B) purchasing on behalf of the fund any security other than one described in (A) immediately above, or selling on behalf of the fund any security which is acquired or held by the fund, to a party in interest: *Provided,* That (i) the security is listed and traded on an exchange subject to regulation by the Securities and Exchange Commission, (ii) no brokerage commission, fee (except for customary transfer fees), or other remuneration is paid in connection with such transaction, and (iii) adequate consideration is paid;

"(5) making any loan to participants or beneficiaries of the plan under which the fund was established where such loans are available to all participants or beneficiaries on a nondiscriminatory basis and are made in accordance with specific provisions regarding such loans set forth in the plan;

"(6) contracting or making reasonable arrangements with a party in interest for office space and other services necessary for the operation of the plan and paying reasonable compensation therefor;

"(7) following the direction in the trust instrument of other document governing the fund insofar as consistent with the specific prohibitions listed in subsection (b)(2);

"(8) taking action pursuant to an authorization in the trust instrument or other document governing the fund, provided such action is consistent with the provisions of subsection (b).

"(d) Any fiduciary who breaches any of the responsibilities, obligations, or duties imposed upon fiduciaries by this Act shall be personally liable to such fund for any losses to the fund resulting from such breach, and to pay to such fund any profits which have inured to such fiduciary through use of assets of the fund.

"(e) When two or more fiduciaries undertake jointly the performance of a duty or the exercise of a power, or where two or more fiduciaries are required by an instrument governing the fund to undertake jointly the performance of a duty or the exercise of power, but not otherwise, each of such fiduciaries shall have the duty to prevent any other such cofiduciary to redress such a breach, except that no fiduciary shall be liable for any consequence of any act or failure to act of a cofiduciary who is undertaking or is required to undertake jointly any duty or power if he shall object in writing to the specific action and promptly file a copy of his objection with the Secretary.

"(f) No fiduciary may be relieved from any responsibility, obligation, or duty imposed by law, agreement, or otherwise. Nothing here-

in shall preclude any agreement allocating specific duties or responsibilities among fiduciaries, or bar any agreement of insurance coverage or indemnification affecting fiduciaries, but no such agreement shall restrict the obligations of any fiduciary to a plan or to any participant or beneficiary without prior approval of the Secretary.

"(g) A fiduciary shall not be liable for a violation of this Act committed before he became a fiduciary or after he ceased to be a fiduciary.

"(h) No person who has been convicted of, or has been imprisoned as a result of his conviction of: robbery, bribery, extortion, embezzlement, grand larceny, burglary, arson, violation of narcotics laws, murder, rape, kidnapping, perjury, assault with intent to kill, assault which inflicts grevious bodily injury, any crime described in section 9(a)(1) of the Investment Company Act of 1940, or a violation of any provision of the Welfare and Pension Plans Disclosure Act, or a violation of section 302 of the Labor-Management Relations Act of 1947 (61 Stat. 157, as amended), or a violation of chapter 63 of title 18, United States Code, or a violation of section 874, 1027, 1503, 1505, 1506, 1510, 1951, or 1954 of title 18, United States Code, or a violation of the Labor-Management Reporting and Disclosure Act of 1959 (73 Stat. 519, as amended), or conspiracy to commit any such crimes or attempt to commit any such crimes or a crime in which any of the foregoing crimes is an element shall serve—

"(1) as an administrator, officer, trustee, custodian, counsel, agent, employee (other than as an employee performing exclusive clerical or janitorial duties) or other fiduciary position of any employee benefit plan; or

"(2) as a consultant to any employee benefit plan, during or for five years after such conviction or after the end of such imprisonment, unless prior to the end of such five-year period, in the case of a person so convicted or imprisoned, (A) his citizenship rights have been revoked as a result of such conviction, have been fully restored, or (B) the Secretary determines that such person's service in any capacity referred to in clause (1) or (2) would not be contrary to the purposes of this Act. No person shall knowingly permit any other person to serve in any capacity referred to in clause (1) or (2) in violation of this subsection. Any person who willfully violates this subsection shall be fined not more than $10,000 or imprisoned for not more than one year, or both. For the purposes of this subsection, any person shall be deemed to have been 'convicted' and under the disability of 'conviction' from the date of the judgment of the trial court or the date of the final sustaining of such judgment on appeal, whichever is the later event, regardless of whether such conviction occurred before or after the date of enactment of this section. For the purposes of this subsection, the term 'consultant' means any person who, for compensation, advises or represents an employee benefit plan or who provides other assistance to such plan concerning the establishment or operation of such plan.

"(i) All investments and deposits of the funds of an employee benefit fund and all loans made out of any such fund shall be made in the name of the fund or its nominee, and no employer or officer or employee thereof, and no labor organization, or officer or employee thereof, shall either directly or indirectly accept or be the beneficiary of any fee, brokerage, commission, gift, or other consideration for or on account of any loan, deposit, purchase, sale, payment, or exchange made by or on behalf of the fund.

"(j) In order to provide for an orderly disposition of any investment the retention of which would be deemed to be prohibited by this Act, and in order to protect the interest of the fund and its participants and its beneficiaries, the fiduciary may in his discretion effect the disposition of such investment within three years after the date of enactment of this Act, or within such additional time as the Secretary may by rule or regulation allow, and such action shall be deemed to be in compliance with this Act."

TITLE VI—ENFORCEMENT

SEC. 601. Whenever the Secretary—

(1) determines, in the case of a pension or profit-sharing-retirement plan required to be registered under this Act, that no application for registration has been filed in accordance with section 102, or

(2) issues an order under section 107 denying or canceling the certificate of registration of a pension or profit-sharing-retirement plan, or

(3) determines, in the case of a pension plan subject to title II, that there has been a failure to make required contributions to the plan in accordance with the provisions of this Act or to pay required assessments or permiums under title III, or to pay such other fees or moneys as may be required under this Act,

the Secretary may petition any district court of the United States having jurisdiction of the parties, or the United States District Court for the District of Columbia, for an order requiring the employer or other person responsible for the administation of such plan to comply with the requirements of this Act as will qualify such plan for registration or compel or recover the payment of required contributions, assessments, premiums, fees, or other moneys.

SEC. 602. Whenever the Secretary has reasonable cause to believe that an employees' benefit fund is being or has been administered in violation of the requirements the Welfare and Pension Plans Disclosure Act or the documents governing the establishment or operation of the fund, the Secretary may petition any district court of the United States having jurisdiction of the parties or the United States District Court for the District of Columbia for an order (1) requiring return to such fund of assets transferred from such fund in violation of the requirements of such Act, (2) requiring payment of benefits denied to any beneficiary in violation of the requirements of such Act, and (3) restraining any conduct in violation of the fiduciary requirements of such Act, and granting such other relief as may be appropriate to effectuate the purposes of this Act, including, but not limited to, removal of a fiduciary who has failed to carry out his duties and the removal of any person who is serving in violation of the requirements of section 15(h) of the Welfare and Pension Plans Disclosure Act.

SEC. 603. Civil actions for appropriate relief, legal or equitable, to redress or restrain a breach of any responsibility, obligation or duty of a fiduciary, including but not limited to, the removal of a fiduciary who has failed to carry out his duties and the removal of any person who is serving in violation of the requirements of section 15(h) of the Welfare and Pension Plans Disclosure Act or against any person who has transferred or received any of the assets of a plan or fund in violation of the fiduciary requirements of the Welfare and Pension Plans Disclosure Act or in violation of the document or documents governing the establishment or operation of the fund, may be brought by any participant or beneficiary of any employee benefit plan or fund subject to the Welfare and Pension Plans Disclosure Act in any court of competent jurisdiction, State or Federal, or the United States District Court for the District of Columbia, without respect to the amount in controversy and without regard to the citizenship of the parties. Where such action is brought in a district court of the United States, it may be brought in the district where the plan is administered, where the breach took place, or where a defendant resides or may be found, and process may be served in any other district where a defendant resides or may be found.

SEC. 604. Suits by a person entitled, or who may become entitled, to benefits from an employee benefit plan or fund, subject to the Welfare and Pension Plans Disclosure Act may be brought in any court of competent jurisdiction, State or Federal, or the United States District Court for the District of Columbia, without respect to the amount in controversy and without regard to the citizenship of the parties, against any such plan or fund to recover benefits required to be paid from such plan or fund pursuant to the document or documents governing the establishment or operation of the plan or fund, or to clarify rights to future benefits under the terms of the plan. Where such action is brought in a district court of the United States, it may be brought in the district where the plan is administered, or where a defendant resides or may be found, and process may be served in any other district where a defendant resides or may be found.

SEC. 605. (a) In any action brought under section 603 or 604, the court in its discretion may—

(1) allow a reasonable attorney's fee and costs of the action to any party;

(2) require the plaintiff to post security for payment of costs of the action and reasonable attorney's fees.

(b) A copy of the complaint in any action brought under section 603 or 604 shall be served upon the Secretary by certified mail, who shall have the right, in his discretion, to intervene in the action.

(c) Notwithstanding any other law, the Secretary shall have the right to remove an action brought under section 603 or 604 from a State court to a district court of the United States, if the action is one seeking relief of the kind the Secretary is authorized to sue for under this Act. Any such removal shall be prior to the trial of the action and shall be to a district court where the Secretary could have initiated the action.

SEC. 606. The provisions of the Act entitled "An Act to amend the Judicial Code and to define and limit the jurisdiction of courts sitting in equity, and for other purposes", approved March 23, 1932, shall not be applicable with respect to suits brought under this title.

SEC. 607. Suits by an administrator or fiduciary of a pension plan, a profit-sharing-retirement plan, or an employees' benefit fund subject to the Welfare and Pension Plans Disclosure Act, to review final order of the Secretary, to restrain the Secretary from taking any action contrary to the provisions of this Act, or to compel action required under this Act, may be brought in the name of the plan or fund in the district court of the United States for the district where the fund has its principal office, or in the United States District Court for the District of Columbia.

SEC. 608. Any action, suit, or proceeding based upon a violation of this Act or the Welfare and Pension Plans Disclosure Act shall be commenced within five years after the plaintiff has notice of the acts or events forming the basis of the claim. Truthful disclosure of a fact in any form or other document required to be filed with the Secretary shall be deemed such notice.

SEC. 609. (a) It is hereby declared to be the express intent of Congress that, except for actions authorized by section 604 of this title, the provisions of this Act or the Welfare and Pension Plans Disclosure Act shall supersede any and all laws of the States and of political subdivisions thereof insofar as they may now or hereafter relate to the subject matters regulated by this Act or the Welfare and Pension Plans Disclosure Act,

except that nothing herein shall be construed—

(1) to exempt or relieve any employee benefit plan not subject to this Act or the Welfare and Pension Plans Disclosure Act from any law of any State;

(2) to exempt or relieve any person from any law of any State which regulates insurance, banking, or securities or to prohibit a State from requiring that there be filed with a State agency copies of reports required by this Act to be filed with the Secretary; or

(3) to alter, amend, modify, invalidate, impair, or supersede any law of the United States other than the Welfare and Pension Plans Disclosure Act or any rule or regulation issued under any law except as specifically provided in this Act.

(b) Subsection (a) of this section shall not be deemed to prevent any State court from asserting jurisdiction in any action requiring or permitting accounting by a fiduciary during the operation of an employee benefit fund subject to the Welfare and Pension Plans Disclosure Act or upon the termination thereof or from asserting jurisdiction in any action by a fiduciary requesting instructions from the court or seeking an interpretation of the trust instrument or other document governing the fund. In any such action—

(1) the provisions of this Act and the Welfare and Pension Plans Disclosure Act shall supersede any and all laws of the State and of political subdivisions thereof, insofar as they may now or hereafter relate to the fiduciary, reporting, and disclosure responsibilities of persons acting on behalf of employee benefit plans, an employee benefit fund subject to the Welfare and Pension Plans Disclosure Act except insofar as they may relate to the amount of benefits due beneficiaries under the terms of the plan;

(2) notwithstanding any other law, the Secretary or, in the absence of action by the Secretary, a participant or beneficiary of the employee benefit plan or fund affected by this subsection, shall have the right to remove such action from a State court to a district court of the United States if the action involves an interpretation of the fiduciary, or reporting, and disclosure responsibilities of persons acting on behalf of employee benefit plans subject to the Welfare and Pension Plans Disclosure Act;

(3) the jurisdiction of the State court shall be conditioned upon—

(A) written notification, sent to the Secretary by registered mail at the time such action is filed, identifying the parties to the action, the nature of the action, and the plan involved; and satisfactory evidence presented to the court that the participants and beneficiaries have been adequately notified with respect to the action; and

(B) the right of the Secretary or of a participant or beneficiary to intervene in the action as an interested party.

TITLE VII—EFFECTIVE DATES

SEC. 701. (a) Sections 101, 102, 103, and 104, title V, and title VI of this Act shall become effective upon the date of enactment of this Act.

(b) Titles II, III, and IV of this Act shall become effective one year after the date of enactment of this Act, except that, with respect to any plan the terms of which have been agreed upon pursuant to a collective-bargaining agreement which is in effect on the date of enactment of this Act but which expires after the effective date of titles II, III, and IV, such titles shall become applicable to such plan on the date of expiration of such collective-bargaining agreement, but in no event later than three years after the date of enactment of this Act.

Mr. TAFT. Mr. President, the private pension system is an important supplement to our social security system. Involving 30 million participants, these 34,000 private pension plans provide a major part of the retirement security for America's working men and women.

Private pension plans have been largely successful. A few pension plans, however, have presented real problems to America's workers which we must all recognize. The Senate Labor Subcommittee, of which I am a member, has been conducting hearings with respect to pension reform. These hearings are not completed, and I believe that American industries should participate fully in suggesting legislative solutions so that the problems which exist can be solved in a constructive manner. Such legislative reforms should not be punitive and should not destroy the private pension system. Instead such reforms should give all employees the kind of protection which is available in our better pension plans.

We must recognize, of course, that pension reform by itself will not provide greater benefits without additional costs. We cannot have something for nothing, and America's workers and employers alike must realize that pension costs are directly translated into hourly wage equivalents.

Speaking candidly, I must say that some type of pension reform legislation will be enacted by the Congress. I say this because we cannot fail to recognize that certain isolated pension plans have created problems where employees have been unable to receive their expected retirement benefits. For many of America's workers this is a real bread-and-butter issue. As a Member of the Senate, I receive as much mail on the issue of pension reform as on any other subject. In 1971, for example, I received over 6,000 letters on this subject. Whatever legislation is enacted, however, must not price pension plans out of existence or curtail their usage.

In this context I think it would be helpful for us to look at some of the specific problems that have arisen so that we can better evaluate the situation which the Congress and the industry are facing.

The first problem in the pension area relates to the stringent vesting provisions of many pension plans. When the Fruehauf Trailer Plant in Avon Lake, Ohio, closed its doors, many workers who had been with the company as long as 11 years found they had no vested pension benefits whatever. Their hopes for financial security upon retirement were dashed. The closing of this facility and the transfer of its operations to other company plants ended the hope of many of those employees for pension benefits in their later years. Other plant closings in Ohio and other parts of the Nation have illustrated this tragic situation.

Employees who voluntarily leave one job to accept a better position with another firm often may not recognize, until it is too late, that by upgrading their salaries they have, in effect, eliminated their pensions.

There are also employees who can never hope to qualify for a pension because of the cyclical nature of their employment or the mobile nature of their job opportunities.

In all of these situations tax deductible contributions on behalf of these employees have been made into a pension fund. These contributions are supposed to have provided employees with retirement security. But in too many instances overly restrictive vesting requirements have resulted in a complete forfeiture of the pension money credited to the employee's account.

It has been estimated that 1 of every 10 workers covered by pension plans in several low-wage industries will never receive pension benefits, Dick Barnes has reported in the Buffalo Courier-Express on July 13, 1970 that:

A sheet metal worker from the Northwest who for years alternated between two union locals because of work availability found when he reached age 70 he would get a pension from neither.

A retired hat worker in Manhattan was notified by her pension plan that payments would be suspended for a year because the fund was not taking in enough money.

A business executive quit his firm after eighteen years, thinking he had pension benefits he could draw at age 65, But when he went to work for a competitior, his original company cancelled the pension right.

A woman who worked 37 years in New York was forced out of her job by a shop shutdown and was told to temporarily withdraw from her union. Later, when she sought her pension, she was told the withdrawal had cost her the pension.

The vesting problem becomes most acute with respect to professional employees who are part of a highly mobile labor force such as salesmen and engineers. Many professional engineers and salesmen tend to work for one company for several years and then move on to another job with another company. The result of these moves may mean that these professional men may approach retirement age without having satisfied the vesting period of any individual employer.

The administration's approach would be to provide vesting to the extent of 50 percent when an employee's age plus years of service totals 50. The only problem with this approach is that it gives employers an additional financial incentive not to hire older workers. As an alternative to that approach we may expect a proposal to provide vesting on the basis of years of service, irrespective of age. We could, for example, provide vesting of 30 percent after 8 years of service, with an additional 10 percent after each year. The result of such a proposal would involve full vesting at the end of 15 years of employment.

We should remember that if most workers are not given some such type of recognition, the political pressures for a more radical solution will only be magnified.

Portability has been suggested as one possible solution to the vesting problem. I do not believe that compulsory portability is the best approach, but the Congress may explore the establishment of a central fund whereby employers may voluntarily participate in a portability plan involving the transfer of vested credits from one employer to another.

Ralph Nader has proposed a radical restructuring of America's private pension systems by proposing what amounts

to instantaneous vesting with benefits determined exclusively in relationship to the contributions made to the fund. He further suggests that each employee be able to direct the investment of the funds attributed to his account. I do not believe that this would be at all workable from an administrative standpoint. It would be hopelessly complex if each employee is allowed to invest his own pension funds. More importantly, Nader's proposal, masquerading as being in the interest of employees, would immediately reduce the benefit levels of pension beneficiaries by over 50 percent.

A second problem of inadequate funding exists even where pension benefits are vested. In some cases, employees with vested pensions lose their benefits because there is simply not enough money in the pension plan.

When Studebaker closed its plant and terminated its pension plan on November 1, 1964, it had been employing nearly 7,000 men and women at its South Bend plant. Tragically there was not enough money in the fund to make full provision for all vested benefits of the employees. After making provision for those who had already retired and those employees who would be age 60 by the projected termination date, the plan was able to pay only 15 cents on the dollar of the "vested" benefits of 4,500 employees, ages 40 to 59, who had 10 years or more of service. It was a rude shock for a 59-year-old man to lose his job, and then find that his vested pension would not be paid and that he would receive only 15 cents on the dollar.

Unfortunately, the Studebaker situation is not unique. Recently, another instance was brought to my attention which may be the most tragic situation of all. Committee inquiries show that when GarWood closed its plant in Findlay, Ohio, all employees who had not yet attained retirement age lost all pension benefits, even where the benefits were vested. Furthermore, employees who had already retired found their pensions reduced by aproximately 62 percent.

I have received a number of letters from barbers who have been contributing to their pension plan for many years and are ready to retire. Now they are concerned that they will not receive the benefits which they had anticipated for their later years.

Even if better provision is made with respect to vesting, there will be only slight improvement for America's retirees unless pension plans are made actuarily sound. There must be an adequate level of funding.

With respect to funding the Congress may establish minimum funding standards which will insure that all pension liabilities incurred by the plan will be funded over a 40-year period. While I cannot be certain that this approach will be taken, it is my judgment that the Congress will resolve the matter on approximately that basis.

The third problem involves irregular and sometimes outrageous investment policies and the misuse of pension funds which have occurred in certain cases. While these abuses are not typical of pension plans in general, instances have been brought to light of scandalous investment practices and insider transactions.

When Secretary of Labor George P. Shultz testified before the House Subcommittee on General Labor on April 16, 1970, he offered illustrations of manipulation, insider dealing, and exorbitant fees that have affected the viability of many pension funds.

He observed that as to one fund, four of the five employer appointed trustees borrowed from the fund and one trustee owed over $62,000, having made no principal or interest payments for more than a year. In another instance, five officers of a corporation, who were the trustees of their pension plan, formed other corporations to retail shoes. The money to finance their outside activities was obtained by loans of up to $460,000 from the pension plan. These trustees had borrowed more than two-thirds of the pension plan assets to finance their own private ventures.

Another small profit-sharing trust had more than 90 percent of its assets loaned back to the employer corporation. When the employer corporation went bankrupt the employees and retirees were the ones who suffered because the loans to the employer were worthless.

The trustees of another pension fund placed $16 million in a questionable investment, which was secured by a mortgage on a proposed golf course. After the project had gotten underway, the management was turned over to a man who 3 months earlier had been released from Federal parole. When the mortgagor went bankrupt the pension fund suffered a loss of $6.7 million.

A classic case of mismanagement was brought to light in the recent litigation with respect to the United Mine Workers' Welfare and Retirement Fund. In the case of Blankenship and others, against Boyle and others, the U.S. District Court for the District of Columbia found that the union held 74 percent of the stock of a Washington bank. The trustees of the union's welfare and retirement fund then deposited as much as $75 million, or 44 percent of the fund's total resources in this bank at no interest. The court found that:

> The money remained at the bank on demand to the bank's advantage but earning nothing for the fund.

The court also said that:

> The beneficiaries were not in any way assisted by these cash accumulations, while the union and the bank profited.

The court also found that the trustees were utilizing the fund's assets primarily to advance the collateral interests of the union instead of advancing the interests of the beneficiaries. In this regard the union was purchasing large blocks of electric utility stocks and lending money to an individual to do the same. The union and the financier would then pressure the management of these utilities to buy only union-mined coal. While there is nothing wrong with a union promoting the use of union-mined coal, it should not do so with trust funds which must be held solely for the purpose of maximizing security for its beneficiaries. In other words, trust funds should not be used to promote the separate interests of the trustees. Trust funds should be invested solely with the objective of safeguarding the interests of the beneficiaries.

In promoting these collateral interests the court found that:

> These activities present a clear case of self-dealing on the part of trustees Lewis and Schmidt and constituted a breach of trust.

The trustees also failed to promptly collect the royalties from a coal company. This was a large coal operator controlled by the union in conjunction with a private investor. This delinquency was as high as $700,000 in 1961. The court said that the union's heavy stock interest in west Kentucky should have disqualified Lewis from participating as a trustee in decisions involving royalty collections from that company. In other words, the union was placing its own proprietary interests in conflict with the interests of its trust fund beneficiaries.

What do these figures mean? In simple terms they mean that a few pension plan trustees have been using the pension fund assets for their own personal business ventures and dealings. They have been putting their own speculative schemes ahead of the security of the employees and pensioners. This is a practice which must be stopped now by Federal law.

When the Labor Subcommittee resumes its investigation I hope that we can explore the possibility of an FDIC-type insurance program to see that employees will not lose their expected pension benefits through improper investment practices.

While I favor an FDIC-type insurance program I would very much oppose any proposal which would require the pooling of private pension fund assets. I believe that the strength of the private pension fund system would be seriously undercut if we were to adopt that approach.

In addition to such an insurance program I believe that the Congress will prescribe new rules of conduct for trustees and fiduciaries controlling employee benefit funds. I believe that the Congress will prohibit conflicts of interest, self-dealing, and other such practices which result in the loss of retirement security.

Finally, some trustees have been overeager to milk pension assets through exorbitant fees. In one instance, five trustees administered the pension and profit-sharing plans of a corporation. Three of the five were past or present officers of the corporation. In 1 year, these five trustees received more than $300,000 in trustees' fees alone from the corporation's pension and profit-sharing plans.

In addition, this pension and profit-sharing plan paid more than $130,000 to a separate corporation controlled by these same trustees which was established to administer and invest the funds.

I believe that American industry should welcome some type of responsible pension reform. From the standpoint of your own self-interest, reasonable pension reforms will serve to protect the reputable members of American industry from unscrupulous pension promoters. Such reforms should apply to union controlled pension funds with equal force.

Recently I learned of an individual who had been making rock and roll records until his business collapsed. Only a few weeks later he surfaced as a pension consultant and pension plan promoter. It is cases like this that increase the pressures for reform.

I believe that, just as reputable securities dealers are protected by meaningful regulations, so the pension industry can protect itself from this type of competition. The bad apples in the barrel are always the ones that receive the comment, and so it is that the cases of pension default and pension plan collapse are the ones that always get the headlines. The pension industry is an important and vital segment of our retirement security system and it must be strengthened and protected. By eliminating the outrageous cases that generate the headlines, the pension industry will have set the stage for greater growth in the years ahead.

Consequently, I am pleased to join with Senator JAVITS, Senator WILLIAMS, and others in cosponsoring this measure which will give America's working men and women the kind of pension protection which they have worked for and deserve. I understand that the committee is going to take up this measure in legislative hearings during the middle of June and I hope that this measure can be quickly adopted.

Mr. HUGHES. Mr. President, I welcome the introduction of proposed legislation today by the Senator from New Jersey (Mr. WILLIAMS) and the Senator from New York (Mr. JAVITS) aimed at providing real and effective supervision of employee pension and welfare benefit plans for American workers.

Too many workers have discovered after years of effort that their pensions were not available as expected. Sometimes the pension trust fund does not contain enough funds to cover every pension commitment. Other workers discover that they have not fulfilled each and every requirement—requirements that they often did not even understand. Companies fail leaving hundreds and thousands of employees with a pitiful settlement instead of a generous pension. This can happen when the individual worker has contributed his own earnings into the pension fund.

The Subcommittee on Labor has amply documented numerous situations. The legislation developed by the subcommittee would create an Office of Pension and Welfare Plans Administration to effectively supervise the billions of dollars held in trust for America's workers.

I support this effort and I hope the bill will receive early Senate action.

PENSION SECURITY FOR AMERICAN WORKERS

Mr. EAGLETON. Mr. President, I am pleased to join today in sponsoring the Williams-Javits Retirement Income Security for Employees Act.

The Nation's system of private pensions has experienced extraordinary growth in recent years. It has grown in assets from $12 billion in 1950 to $130 billion in 1970. Some 30 million workers—nearly half the labor force—are covered by one of the 34,000 pension plans now in operation.

Unfortunately, millions of American workers are dependent for the economic security of their retirement years on pension plans that are themselves too insecure to hold any realistic prospect of keeping that promise. As chairman of the Senate Subcommittee on Aging, I have seen over and over again the sad consequences of old age without an adequate retirement income.

This bill is the product of several years of intensive investigation of our system of private pensions by the Senate Labor Subcommittee, under the outstanding leadership of the chairman, the distinguished junior Senator from New Jersey (Mr. WILLIAMS) and the ranking minority member, the very able senior Senator from New York (Mr. JAVITS). Through the facts obtained from this investigation, and from hearings held on the subject, the subcommittee was able to identify specific weaknesses in the basic structure of the private pension system. The most common problems are these:

Inadequate vesting, that is, the failure to assure a worker that he has qualified for pension rights under a formula prescribing a specified number of years worked for the company, a particular age reached, or, as is often the case, a combination of these factors. Thus an employee working under a pension plan with no vesting rights—an extreme situation—could work for 40 years for the same employer but find he had no pension if he were laid off the day before he reached retirement age.

Insufficient funding of assets, resulting in an employee being informed that he will receive no pension, or a reduced pension, because there simply is not enough money in the pension fund to pay all of the benefits that have been promised. This situation usually results from the termination of a plan when a company goes out of business or closes a particular plant. The Labor Department estimates that some 25,000 people are thus affected by the termination of about 500 plans a year—admittedly, a small fraction of the total number of employees in the private pension system but a tragedy for those who happen to be among the 25,000 affected.

Violations of fiduciary responsibility by those entrusted with administering, investing and safeguarding the pension fund. These violations range from trustees using the pension funds for their own benefit to instances where the assets have been dissipated because of the trustees' failure to exercise reasonable skill or care in handling the pension fund.

Laxity in enforcing the patchwork of laws we now have regarding pension funds, thus allowing abuses and illegal practices to continue without being questioned by responsible authorities.

Failure to inform workers of the details of their pension rights, leaving them in the dark as to what is required of them in order to qualify for retirement benefits and what those benefits are going to be.

The bill being introduced today, Mr. President, is designed to deal with these problems in a comprehensive, systematic fashion. As with any measure of its size and complexity, the bill is by no means perfect. There are undoubtedly provisions that can be improved and perhaps we may even find that some of the fundamental concepts underlying the bill need refining.

This, of course, is a primary function of the committee process in Congress and I look forward to hearings on the legislation at which we can get the benefit of comments and criticisms by interested parties.

As a member of the Labor Subcommittee, I conducted hearings in St. Louis, Mo., last week to investigate the effects of pension plan termination on workers with vested pension rights. We heard testimony regarding the closing of two plants—the Benson Manufacturing Co. in Kansas City, Mo., and the American Zinc Co. plant in East St. Louis, Ill.

In both cases, the closing of the plant meant termination of the pension plan covering the workers formerly employed there, even though the companies, or their parent corporations, continued operations elsewhere. And in both cases, termination of the pension plan left workers with vested benefits—workers who had every reason to expect that they would ultimately receive some retirement income under the plan—high and dry, with no assets in the pension fund to pay for their benefits.

Indeed, we found that in at least one of these cases, the pension fund assets were even insufficient to pay full benefits to workers who had already retired.

I ask unanimous consent that an editorial on this subject that appeared in the Kansas City Star on May 7, 1972, be printed in full in the RECORD at the conclusion of my remarks. The Star editorial provides an exceedingly complete and comprehensible discussion of the full range of problems with which the Williams-Javits bill deals. I want to commend the author, Mr. Robert Sigman, for his thorough research and skillful exposition of a complex and difficult subject.

Finally, Mr. President, it is important to note that our concern with regard to weaknesses in some aspects of the private pension system should not be read as a condemnation of the entire system. On the contrary, I believe the efforts embodied in this bill must be counted as a failure if the final legislation we develop does not operate to improve the private pension system and promote, rather than inhibit, its future growth.

Our aim is to establish standards that will raise those plans now found to be defective to the level of the many that must be rated as excellent. If we are successful, we will assure that the promises held out to workers by their pension plan will be kept, and the economic insecurity now endemic among millions of older Americans will be alleviated for future generations.

There being no objection, the editorial was ordered to be printed in the RECORD, as follows:

[Kansas City (Mo.) Star, May 7, 1972]

PRIVATE PENSIONS: REAL OR A CRUEL MIRAGE?

The case histories have a familiar ring. A man spends years, perhaps 40 or more, working, confident that he will have adequate income in retirement. Then, much too late, as he faces old age, he is shocked to find that

his pension plan has fallen tragically short of his expectations.

As a U.S. Senate subcommittee hearing in St. Louis last week showed, the unexpected termination of private retirement programs is neither isolated nor remote. The session, conducted by Sen. Thomas F. Eagleton of Missouri, took testimony from workers who will receive less than they anticipated after the closing of the Benson Manufacturing Company plant here last year and a St. Louis area firm.

A suit against Benson is pending in federal court. The plaintiffs are seeking full coverage; the company contends that it has fulfilled its obligation under agreement reached in collective bargaining.

A 2-year investigation by the Senate Labor Subcommittee found many reasons why retirement benefits sometimes evaporate or produce a trickle of what employees earned. The two principal reasons are that (1) many workers leave their jobs or are fired before becoming eligible and (2) plans are dropped when businesses close or merge, sometimes without warning, without enough assets to cover the claims.

THE ANNUAL TOLL

An estimated 25,000 people are affected by the cessation of about 500 pension funds a year, records at the Labor Department reveal. Some of them receive part of their benefits, but others lose everything.

That may be a rather small number among the more than 30 million Americans—about half those in the labor force—who are looking forward to retirement benefits from one of the 34,000 private plans now in operation. If you are among the 25,000, however, it can be a tragedy; payments from a private system (usually as a supplement to Social Security) in some cases are the difference between having a comfortable, acceptable standard of living and one below the poverty line. It can be the difference between living in dignity and having a meager existence.

This human factor should be enough to warrant corrective action by Congress. The tremendous growth of private retirement funds, which means that more and more people will be depending on them, demands remedial legislation.

From $12.8 billion in 1950, the assets held in private programs escalated to $129 billion in 1970. For perspective that is more than double mutual fund holdings. By 1980 the private pension nest egg is expected to be $250 billion and involve 42 million beneficiaries.

Although there are laws that apply to private pension funds, they are virtually unregulated in comparison with banks and insurance companies. Administrators are required to make annual reports on operation and structure of the funds. But there are no requirements on audits or insurance. Moreover, few workers seem to comprehend the complicated language that spells out the qualifications and conditions for eligibility and payment.

A Labor Department official seemed to capture the sense of what the average man is up against in this wordy analysis:

"If you remain in good health and stay with the same company until you are 65 years old, and if the company is still in business, and if your department has not been abolished, and if you haven't been laid off for too long a period, and if there is enough money in the fund, and if that money has been prudently managed, you will get a pension."

"The fine print will get you if you don't watch out."

Right now is none too soon for you to determine what you have been promised—or what you think you have been promised—if your employer were to go out of business. And if you were to change jobs and if you were to undergo any or all of the other things the Labor Department man talks about.

Don't depend much on your union for help. Labor has negotiated some decent pension agreements, but the best pledge in the world is no good if it isn't backed up with enough money to meet the liability—namely your pension checks. Labor's record in the handling of pensions is extremely spotty.

It will help to know a few terms, "Vesting," for example. This means the irrevocable right of the participant to his accrued pension benefits, regardless of whether he continues to be employed by the sponsoring firm until he retires. Many plans have vesting, others do not. Some have combinations of service and age. A worker would have a vested right after he is 55 years old and has been employed 15 years, for instance. But if he gets terminated at 45, even though he has been on the job 20 years he may wind up with nothing.

"Portability" is another key word in the pension lexicon. It means the transfer of vested pension rights from one employer to another. This is important in our mobile society. Few people work for one employer exclusively. Yet without portability a change in jobs can be disastrous.

The 100th anniversary of the use of private pensions will occur in 1975. Congress has encouraged them since the 1920s by granting tax advantages on employer contributions. By now the great majority are financed by management.

WORLD WAR II IMPETUS

The real growth started during World War II when wages were frozen and fringe benefits were used to make contracts more palatable to labor. In the late 1940s a court ruling allowed unions to negotiate pension benefits.

The development that drew the most public attention to private pensions, however, was the Studebaker Corporation closing in 1963. Many employees received nothing. Some 4,500 vested workers under the age of 60 got only 15 per cent of what they expected. The situation developed because the plan had been in operation 13 years, not long enough to accumulate enough assets to cover the commitments.

No one has said that sound pension programs don't exist. They do.

But much sentiment points toward reform. Better control of investments. Insurance on the funds similar to the Federal Deposit Insurance Corporation. Guidelines on vesting and portability. In short a comprehensive law for all private pension plans.

Legislation already has been introduced in both houses. Sen. Harrison A. Williams, Jr. (D-N.J.), chairman of the Labor and Public Welfare Committee, is involved in drafting a bill. The Nixon administration has its own version before Congress.

The outlook is not good for final action this year, however. Protection is clearly needed. Congress can provide it.

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By Mr. PERCY (for himself, Mr. COOK, and Mr. SCHWEIKER):

S. 3599. A bill to expand and improve the direct food distribution program. Referred to the Committee on Agriculture and Forestry.

FOOD DISTRIBUTION ACT OF 1972

Mr. PERCY. Mr. President, I am introducing today a bill to expand and strengthen the food distribution program of the U.S. Department of Agriculture.

The food distribution program—often referred to as the "commodity distribution," "surplus distribution," or "direct distribution program"—is part of the triumvirate of programs administered by USDA to help feed millions of Americans. The other two are the child nutrition programs and the food stamp program.

The food distribution program has traditionally had the dual purpose of alleviating farm surplus and helping the poor. It presently feeds about 3.5 million Americans living in about 1,100 counties and cities. It is an outgrowth of farm-oriented legislation which was developed in the mid-1930's. That legislation was designed primarily to remove farm surpluses and help support farm prices; and, only secondarily, to feed America's hungry. The program reached peak levels after World War II. Since the early 1960's, it has been overshadowed by the food stamp program, which now reaches about 11.5 million people.

Last September I had the privilege to chair 4 days of hearings by the Senate Select Committee on Nutrition and Human Needs which assessed the performance of the food distribution program for the first time in 35 years.

The hearing record is a story of Federal bureaucratic confusion, of uncertainty on the part of the States as to their own responsibilities, of attempts by the counties to place barriers before the poor, and of a general attitude toward commodity recipients as second-class citizens.

This bill is an effort to deal directly and forcefully with the host of problems which our hearings revealed. It is designed to make the Government more responsive to the recipients of surplus foods and to make the delivery of food to the poor and ill-fed the major aim of the program.

My authorship of this bill does not in any way imply that I favor reversing the trend away from the food distribution program and toward the food stamp program. I hope that food stamps will eventually replace commodity distribution entirely; and I hope that cash benefits to the poor will eventually eliminate the need for food stamps.

But these developments are a long way off. We need a strong and workable food distribution program now. And that is what this bill accomplishes.

I want to point out that this bill does not amend any existing statute but rather establishes a new program. The reason I do this is simply because there are only vague and passing references to a food distribution program in the authorizing legislation, section 32 of the Agricultural Adjustment Act of 1935 and section 46 of the Agricultural Act of 1949.

Because the food distribution program was conceived of and has been implemented as basically a farm support program, there is very little USDA involvement at present with the consumer. If a county chooses to participate in the commodity program, then USDA will contribute all of the food and will meet some of the administrative costs. In fiscal year 1971, USDA spent about $290 million to purchase 1.2 billion pounds of food, and about $19.7 million for local and State administrative costs.

The Federal Government's role effectively ends when the commodities it purchases from various processors are deposited in various State warehouses. Each State or locality sets its own standards of eligibility and USDA has no role in the

certification process. Moreover, the whole process of purchasing, packaging, and distributing the food to the needy has not been organized with the ultimate consumer in mind, but rather for the benefit or convenience of the producer and processor of the surplus commodities.

In order fully to safeguard the health and well-being of all low-income households by providing them with adequate levels of food consumption and nutrition, it is essential to expand and improve the present food distribution program so that it serves the low-income consumer and makes easily accessible to him food whose quality is unimpaired, which suits his tastes, which is appropriately processed and packaged to permit convenient use and storage, and which is of sufficient quantity and variety to constitute a nutritionally adequate diet as prepared and served.

The bill sets up national standards of eligibility similar to those of the food stamp program and provides that eligibility for one program automatically constitutes eligibility for the other. Administration is left in the hands of the county except where participation falls below 50 percent of the eligible population. In that case the Secretary of Agriculture is authorized to step in and run the program.

In an attempt to insure the recipient a nutritionally adequate diet, the bill authorizes that foods other than surplus commodities may be distributed and that foods distributed must provide 125 percent of the recommended daily allowance of nutrients. The foods must be adequately packaged in small quantities and must be labeled to indicate the manufacturer's name, all ingredients, the nutritional content, and a date when the foods can no longer be assumed to be safe.

The bill requires that the distribution system at the county level be set up so that foods will be available in convenient locations and at convenient hours. The warehouses must meet the local health standards for restaurants.

Finally, the bill authorizes USDA to pay all administrative costs of the program. The bill provides for authorizations of $75 million and $100 million in the next 2 fiscal years to cover these costs. Foods will continue to be purchased with section 32 moneys.

Mr. President, this Congress and this administration have committed themselves time and time again to an all-out war against hunger and malnutrition. The United States, President Nixon says, is firmly committed to help the poor and feed the hungry.

With this legislation, the Congress has the opportunity to take a significant step in our progress toward the goal of eliminating hunger and malnutrition. We must replace a faltering and ineffective feeding program with one which will fulfill the expectation of the poor and disadvantaged. I urge swift action on this badly needed legislation.

I ask unanimous consent that the full text of the bill be printed at this point in the RECORD.

There being no objection, the bill was ordered to be printed in the RECORD, as follows:

S. 3599

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That this Act may be cited as the "Food Distribution Act of 1972".

STATEMENT OF FINDINGS AND PURPOSE

SEC. 2. (a) The Congress finds that—

(1) millions of Americans living in low-income households suffer from hunger and malnutrition because their income is insufficient to enable them to purchase a nutritionally adequate diet through normal channels of trade;

(2) while the food stamp program enables some low income households to afford a nutritionally adequate diet, many low-income households are not located in areas in which the food stamp program operates or are otherwise unable to participate fully in that program;

(3) for those low-income households not assisted by the food stamp program, the food distribution program is the sole alternative source of Federal family food assistance;

(4) the food distribution program now in effect fails to eliminate hunger and malnutrition among low-income households;

(5) the food distribution program now in effect is said to be designed and administered for the benefit of the producers of surplus agricultural commodities rather than for the benefit of low-income households in need of adequate nutritious food;

(6) the food distribution program now in effect provides food at times that is either spoiled at the time of distribution or spoils immediately after distribution; that is unsuited to ethnic, religious, or other personal preferences; that is in a form demanding extensive preparation; and that is insufficient in quantity and variety to meet minimum daily nutritional allowances, particularly given the problems of storage and handling confronting low-income households; and

(7) in order fully to safeguard the health and well-being of all low-income households by providing them with adequate levels of food consumption and nutrition, it is essential to expand and improve the present food distribution program so that it serves the low-income households not reached by the food stamp program and makes easily accessible to such households food that is unimpaired in quality; that is consonant with the tastes of the recipients; that is appropriately processed and packaged to permit convenient use and storage; and that is of sufficient quantity and variety to constitute a nutritionally adequate diet as prepared and served.

(b) It is the purpose of this Act to expand and improve the food distribution program so that it meets the criteria set forth in subsection (a)(7) of this section and, in combination with the food stamp program, helps eliminate hunger and malnutrition from every low-income household in the United States.

DEFINITIONS

SEC. 3. As used in this Act—

(1) The term "distributing agency" means any State agency or the Secretary or any public agency or private nonprofit organization responsible for distributing food to recipient households either by virtue of delegation from a State agency or action by the Secretary pursuant to the provisions of section 7(e) of this Act.

(2) The term "food distribution program" means the program of distributing federally donated foods and agriculture commodities and products to low-income households under section 32 of the Act of August 24, 1935, as amended (7 U.S.C. 612c), or section 416 of the Agricultural Act of October 31, 1949, as amended, or under any other provision of law administered by the Secretary.

(3) The term "food stamp program" means the program of distributing food coupons to low-income households under the Food Stamp Act of 1964, as amended.

(4) The term "household" means one or more individuals, related or nonrelated, who are not residents of an institution or boardinghouse, but who live together as one economic unit and customarily eat meals together.

(5) The term "nutritional value" means the amount of nutrients (protein, vitamins A, B, C, and D, carbohydrate, fat, calories, calcium, iron, and such other nutrients as are contained in the nutritional requirements established by the Recommended Daily Allowances of the Food and Nutrition Board, National Academy of Sciences-National Research Council) contained in a food expressed in terms of the relationship of the amount of each nutrient contained in such food to such recommended daily allowances.

(6) The term "program subdivision" means any county or other political unit or area smaller than a State in which a food distribution program is in operation.

(7) The term "Secretary" means the Secretary of the United States Department of Agriculture.

(8) The term "State" means each of the fifty States, the District of Columbia, Puerto Rico, Guam, the Virgin Islands, and the Trust Territories of the Pacific.

(9) The term "State agency" means the agency of the State government, including the local offices thereof, which has the responsibility for the administration of the food distribution program within the State, except that after July 1, 1973, it shall mean the agency responsible for the administration of the federally aided public assistance programs within the State.

(10) The term "food" has the meaning prescribed for that term by section 201 of the Federal Food, Drug, and Cosmetic Act, except that such term does not include any fresh fruit.

(11) The term "perishable or semiperishable food" means any food which the Secretary determines has a high risk of any of the following as it ages: (A) spoilage; (B) significant loss of nutritional value; or (C) significant loss of palatability.

(12) The term "pull date" means the last date on which a perishable or semiperishable food can be sold for consumption without a high risk of spoilage or significant loss of nutritional value or palatability, if stored by the consumer after that date for the period which a consumer can reasonably be expected to store that food.

ELIGIBLE HOUSEHOLDS

SEC. 4. (a) In the administration of the food distribution program, the Secretary shall provide that any household shall be eligible to participate in such program if its income and other financial resources are within the criteria established by the Secretary under section 6(a) of the Food Stamp Act of 1964, as amended, except that any household shall be eligible to participate in such program if, on the basis of its income and other financial resources, it would have been eligible for food stamp coupons under the standards of eligibility of the State plan of operation which was in effect, immediately prior to the enactment of Public Law 91-671 (84 Stat. 2048), for the food stamp program for the State in which such household is located.

(b) In determining the eligibility of any household to participate in the food distribution program, none of the resources of such household, other than income, shall be counted.

(c) The Secretary may establish temporary emergency standards of eligibility, without regard to income and other financial resources, for households that are victims of any disaster which has disrupted commercial channels of food distribution when he

determines that such households are in need of temporary food assistance.

NATURE AND QUANTITY OF FOOD DISTRIBUTED

SEC. 5. (a) The food distributed pursuant to the food distribution program shall not be restricted to commodities deemed to be in surplus, but shall include commodities that (1) are suited to the particular ethnic, religious, or other taste preferences of the recipient households as determined by sample surveys conducted by the Secretary in each program subdivision, and (2) are appropriately fortified with vitamins and minerals to overcome proven nutritional deficiencies.

(b) The food distributed pursuant to the food distribution program shall, when delivered to the recipient households, be in a condition fit for safe consumption and in a form, processed or otherwise, that is convenient to prepare for consumption.

(c) The food distributed pursuant to the food distribution program shall include as wide a range of commodities as possible in keeping with the criteria set forth in subsections (a) and (b) and shall be of sufficient quantity and variety to provide recipient households with 125 per centum of their daily nutritional requirements as established by the Recommended Daily Allowances of the Food and Nutrition Board National Academy of Sciences-National Research Council.

PACKAGING AND LABELING

SEC. 6. The food distributed pursuant to the food distribution program shall be packed in containers that (1) are sufficiently durable to withstand a storage period of six months without breaking open or otherwise permitting the contents to come in contact with the outside air; (2) are impervious to vermin and insects; (3) are equal in every performance characteristic to the containers used to hold comparable foods distributed under title II of the Agricultural Trade Development and Assistance Act of 1954, as amended; (4) can be, when practicable and after the contents have been consumed, used for a purpose other than that of food container; (5) are, when practicable and prescribed by the Secretary, of a size sufficient to hold no more than five average adult servings of the food contained therein; and (6) bear a label which has type that is conspicuous and easily legible in distinct contrast (by topography, layout, color, embossing, or molding) with other matters on the container, and which contains a statement specifying (A) all ingredients contained in such food in the order of their predominance, (B) the nutritional value of each average serving of food contained therein, (C) the number of servings of food contained therein, (D) the name and address of the producer of the food contained therein, and (E) in the case of perishable or semi-perishable food, the pull date and the optimum temperature and humidity conditions for storage by the ultimate consumer.

ADMINISTRATION

SEC. 7. (a)(1) Subject to the conditions prescribed in paragraphs (2), (3), and (4) of this subsection, the distributing agency for any State or any subdivision of a State shall assume responsibility for the certification of applicant households and for the distribution of food allotments.

(2) Applicant households shall be certified for eligibility solely on the basis of a simplified written statement, conforming to standards prescribed by the Secretary, and such statement shall be acted upon and eligibility certified or denied within seven days following the date upon which the statement is initially filed. A certification of eligibility shall remain in effect for one year from the date thereof. The Secretary shall, however, provide for adequate and effective methods of verification of the eligibility of recipients subsequent to certification through the use of sampling and other scientific techniques. Notwithstanding any other provision of law, if a household, certified as eligible for the food stamp or food distribution program in any political subdivision, moves to another political subdivision in which the food stamp or food distribution program is operating, such household shall be eligible to participate in either the food stamp or food distribution program, whichever is operating in such other political subdivision, in accordance with the prior certification.

(3) Food allotments under the food distribution program shall be distributed in each subdivision in which such program is in operation on a fixed schedule on a weekly basis between 9 a.m. and 6 p.m. and after 6 p.m. on at least one weekday and/or on Saturday, and shall be distributed from a central location within that subdivision so that no recipient shall have to travel unreasonable distances or shall have to spend an unreasonable length of time in travel. Each recipient household shall be informed of the times and locations of distribution by means of a monthly letter from the distributing agency, and such times and locations shall be regularly announced in the newspapers that circulate in the subdivision and, where feasible, on the radio and television stations operating in the subdivision. Such times and locations shall also be prominently posted in each public assistance office in the subdivision.

(4) The distributing agency shall assure, in accordance with regulations issued by the Secretary, that the distribution location and the site of each warehouse in the subdivision in which foods to be distributed are stored prior to distribution (if different from said location) are inspected at least twice a year by appropriate State or subdivision health officials and certified by such officials as complying with the State and/or subdivision health codes applicable to restaurants and similar enterprises at which food is handled.

(b) The State agency of each participating State shall assume responsibility for the certification of applicant households and for the distribution of food allotments. There shall be kept such records as may be necessary to ascertain whether the program is being conducted in compliance with the provisions of this Act and the regulations issued pursuant to this Act. Such records shall be available for inspection and audit at any reasonable time and shall be preserved for such period of time, not in excess of three years, as may be specified in regulations issued by the Secretary.

(c) Participating States or participating political subdivisions thereof shall not decrease welfare grants or other similar aid extended to any person or persons as a consequence of such person's or persons' participation in benefits made available under the food distribution program.

(d) The State agency of each State shall submit for approval a plan of operation specifying the manner in which such State intends to conduct such program. Such plan of operation shall provide, among such other provisions as may by regulation be required, the following: (1) for the use of the eligibility standards promulgated by the Secretary under section 3 of this Act and the certification procedures specified in subsection (a) (2) above; (2) safeguards which restrict the use of disclosure of information obtained from applicant households to persons directly connected with the administration or enforcement of the provisions of this Act or the regulations issued pursuant to this Act or to State or local prosecuting attorneys; (3) that the State agency shall undertake to inform low-income households concerning the availability and benefits of the food distribution program and encourage the participation of all eligible households, with use of bilingual materials and personnel wherever necessary; (4) for the granting of a fair hearing and a prompt determination thereafter to any household aggrieved by the action of a State agency under any provision of its plan of operation as it affects the participation of such household in the food distribution program in accordance with the procedures set forth in the regulations issued pursuant to the Food Stamp Act of 1964, as amended, and (5) for the submission of such reports and other information as may from time to time be required.

(e) After the lapse of ninety days from the approval of this Act, if a month should occur in the course of the operation of the food distribution program in any subdivision in which the number of persons participating in the program is less than one-half of the number of persons in that program subdivision who are from households whose annual income is below the poverty level as determined by the Secretary in consultation with the Secretary of Health, Education, and Welfare (which number shall be determined annually on the basis of the most recent available data from the Secretary of Commerce), the Secretary shall directly administer such program in such subdivision or administer such program through any appropriate Federal, State, or county agency or through any public agency or private nonprofit organization approved by the Secretary. When the Secretary administers a food distribution program through a public agency or private nonprofit organization, he shall require the public agency or private nonprofit organization to observe all the appropriate provisions of this Act and regulations issued pursuant thereto.

COOPERATION WITH DISTRIBUTING AGENCIES

SEC. 8. (a) The Secretary shall pay each distributing agency an amount equal to all of the operating expenses incurred by the distributing agency in administering the food distribution program, including, but not limited to, the cost of determining the eligibility of households, of transporting the food to be distributed from the points at which it is received from the Secretary to the locations at which it is distributed to recipient households (including the cost of delivering such food to the homes of recipient households composed entirely of persons sixty years of age or over and/or persons who are too physically or mentally handicapped to travel to the distribution location for the purpose of carrying such food to their homes), of storing such food in warehouses under such conditions as may be necessary to meet the distribution requirements prescribed in section 5(b) of this Act, and of taking the action required under the provisions of section 7(d)(3) of this Act. In no event shall funds be used to pay any portion of such expenses if reimbursement or payment thereof is claimed or made available from any other Federal source.

(b) In addition to funds appropriated or otherwise available under any other provision of law, the Secretary is authorized to use for the fiscal year 1973 the sum of $75 million and for each fiscal year thereafter the sum of $100 million in funds from section 32 of the Act of August 24, 1935 (7 U.S.C. 612c) to carry out the provisions of subsection (a).

Mr. COOK. Mr. President, I am pleased to join the senior Senator from Illinois (Mr. PERCY) in introducing this unquestionably needed legislation which proposes not only to correct the present faults contained in the food distribution program but also to strengthen this family feeding program.

When the food distribution program was first established in the 1930's, there was no real concept of the extent of hunger and malnutrition in America. Not

until the 1960's did America finally wake up to the fact that there are millions of Americans suffering from hunger and malnutrition. With this awakening, Congress passed the Food Stamp Act of 1964 as a means to provide adequate diets to low-income persons. I strongly support the continued movement toward nationwide operation of the food stamp program in every country. However, it has already taken 8 years to implement 2,044 food stamp projects. Taking into account the average rate of implementation of food stamp projects and also the remaining 1,163 counties on the food distribution program, it appears that the food distribution programs will need to continue for a few more years.

Upon examining present law pertaining to the food distribution program, there is a definite lack of legislation regarding administration of this program and the quality, quantity, packaging, and distribution of the provided foods. It appears that Congress is either unaware of the serious problems occurring within the food distribution program or Congress is ignoring these problems.

The food distribution programs serves 3.5 million needy Americans and is the only family feeding program for the poor in 1,163 counties. For many of these needy families, the free food that they receive is the only food that they get and in most instances the participants do not even get all the food items to which they are entitled. To receive 12 of 24 items is a common situation.

During the Select Committee on Nutrition and Human Needs' hearings last September, testimony on the food distribution program revealed the continual reoccurrence of several problems in this program such as the spoilage of the food, bulky and inadequate packaging, insufficient labeling information, distribution centers located inconveniently, and lack of transportation. Some of these problem situations discourage participation by the low-income persons who really need such assistance.

The Food Distribution Act of 1972 attempts to eliminate these problems through legislative authority. As my distinguished colleague from Illinois has stated, this bill does not amend existing law, but rather this is new legislation to provide congressional authority for program improvements and administrative funds for the Department of Agriculture.

The Department of Agriculture is aware of needed changes in the program. This was indicated recently when the Department redesigned the labels for the food distribution program to contain both the English and Spanish name of the food item, simplified instructions, illustrations, and a symbol indicating in which "food group" the item belongs. I heartily commend the Department of Agriculture for developing such revisions. However, more revisions are needed such as those proposed in section 6 of our bill.

It is obvious that the program changes provided for in this legislation will require an increase of administrative funds. Presently, less than $100 is spent on each participant in the food distribution program. The food stamp program, in comparison, provides a food stamp bonus of $800 for each participant. Is the U.S. Government saying, in effect, that the participant in the food distribution program is less hungry and less deserving of an adequate diet than a participant in the food stamp program? Although still considerably lower than the food stamp figure, our bill would allow for a cost of less than $200 for each participant in the food distribution program. Such an increase, however, would mean a more nutritional diet through much improved distribution methods.

Congress must take action now on this program which has a direct effect on the health of 3.5 million Americans. I strongly urge that Congress move on the Food Distribution Act of 1972 and approve this vital piece of legislation.

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By Mr. HARTKE:

S. 3600. A bill to establish a national growth policy; to provide for the creation of a National Growth Policy Planning Board; and to provide Federal assistance to the States for growth policy planning. Referred to the Committee on Government Operations.

NATIONAL GROWTH POLICY PLANNING ACT

Mr. HARTKE. Mr. President, because of the growth of population and technology threaten the very survival of our Nation, I am, today, introducing the National Growth Policy Planning Act of 1972. This measure not only calls for the creation of a national growth policy, it creates a National Planning Board and a program of Federal assistance to States and interstate agencies to develop statewide and regional growth policy planning as elements of our National policy.

Today, our Nation faces problems of such magnitude and complexity that they threaten irreparable damage to the ecosystem that is essential to our survival. As the Nation's population continues to concentrate in urban areas, the effects of pollution become more alarming. With the continued depletion of natural resources and the uncontrolled proliferation of industry, the onrushing possibility of national ecocide approaches reality. Indeed, our very survival seems a race against time.

In order to prevent future environmental disasters that could well be of international proportions, we must begin now to control the Nation's growth. To guarantee the quality of life on our Nation's finite resource base, we must formulate a national policy to more efficiently manage and plan for future growth. The act establishes a national growth policy to effectuate economic development, population control, housing distribution, the use of natural resources, the protection of our environment, and the location of government and private facilities in a manner and magnitude that, it is hoped, will enhance the chances that our Nation will continue to prosper.

In a recent report entitled, "The Limits of Growth," written by the Club of Rome—an internationally distinguished group of businessmen, economists, and scientists—the need for controlling the Nation's growth was documented. Basing their findings on a computerized model system of the world developed at the Massachusetts Institute of Technology, the report forecast ecological collapse in the next century. Yet, Congress has only begun to formulate a national growth policy. In title VII of the Housing and Urban Development Act of 1979, however, Congress recognized the critical need to implement a growth policy for at least our urban areas. The administration and several of my colleagues in the Congress have, subsequently, sponsored bills limited to national land-use planning, alone. I believe my bill develops a more comprehensive and efficient policy to manage and control the interrelated and complex problem of growth in both our urban and rural areas.

At present, a system of Federal, State, and local governmental units are concerned with the planning and decisionmaking which affect growth. However, this system lacks a comprehensive orientation to deal with the problems that we now face. The problems that we face today will be magnified many times in the future if we fail to develop the institutional and legal capacity to deal with the future demands that will be placed upon our physical and human resources. The creation of a National Growth Planning Board, as provided in the act, would help coordinate the efforts of Federal, regional, State. and local governments to plan and manage growth. In effect, it would constitute a national research, planning, and coordinating board with a strong emphasis on the input of State, local, and public participation.

On the local level, the current legal and institutional arrangements for managing growth are, in many respects, archaic and ineffective. The National Growth Policy Planning Act would encourage modernization by providing Federal technical and financial assistance and sanctions. Federal financial assistance to any project that would have a substantial impact on growth in the State would be terminated if a State refused to institute effective plans to control growth. This will prompt State and regional agencies to actively and vigorously participate in documenting needs and resources, managing, and planning for efficient and balanced national growth. It is also hoped that the act would encourage States to set up interstate metropolitan planning authorities as a first step in controlling growth in our urban areas.

Mr. President, I ask unanimous consent that the text of the bill and the section analysis be printed in the RECORD at this point.

There being no objection, the bill and analysis were ordered to be printed in the RECORD, as follows:

S. 3600

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,*

SHORT TITLE

SECTION 1. This Act may be cited as the "National Growth Policy Planning Act".

TITLE I—NATIONAL GROWTH POLICY PLANNING AND PROGRAM OF ASSISTANCE TO THE STATES

PART I—FINDINGS, POLICY, AND PURPOSE

FINDINGS

SEC. 101. (a) The Congress hereby finds that there is an immediate national interest

in an efficient and comprehensive system of national, regional, statewide, and local growth policy planning and decision making and that the rapid growth of the Nation's population, a deteriorating environment, increasing urban sprawl, a disproportionate dependence on inefficient transportation systems, large scale industrial and economic growth, conflicts in patterns of land use, the fragmentation of government entities exercising growth policy planning powers, and the increased size, scale and impact of private and public actions have created a situation in which growth policy management decisions of national, regional, statewide and local concern are often being made on the basis of expediency, tradition, short-term economic considerations, and other factors which often detract from the real concerns of sound national growth policy and are detrimental to the future well-being of the nation.

(b) The Congress further finds that a failure to conduct competent, ecologically sound growth policy planning has on occasion, required public and private enterprise to delay, litigate, and cancel proposed public utility, industrial and commercial developments because of unresolved growth policy planning questions, thereby causing an inefficient use of human and physical resources and a threat to the public welfare and often resulting in decisions to locate utilities, industrial and commercial activities in the area of least public and political resistance, but without regard to relevant ecological, social, economic, demographic and environmental growth policy considerations.

(c) The Congress further finds that many Federal agencies are deeply involved in national, regional, State and local growth policy planning and management activities which because of the lack of consistent policy often results in needless undesirable and costly conflicts between agencies of Federal, State and local government; that existing Federal growth policy planning programs have a significant effect upon the location of population, economic growth, the character of industrial, urban and rural development and the quality of life; that the purposes of such programs are frequently in conflict, thereby subsidizing undesirable and costly patterns of growth; and that an immediate and extraordinary effort is necessary to interrelate and coordinate existing and future Federal, State, local and private decision making within a system of planned growth and reestablish priorities that are in accordance with national policy of limited and orderly growth.

(d) The Congress further finds that while the primary responsibility and constitutional authority for growth planning and management of non-federal lands rests with the State and local governments, it is increasingly evident that the manner in which this responsibility is exercised has a significant influence upon the utility, value and future of the public domain, national park system, forests, seashores, lakeshores, recreation, wilderness and other Federal areas; and that the failure to plan and poor planning at all levels of government, pose serious problems of broad public concern and often result in irreparable damage to commonly owned assets of essential national importance such as estuaries, ocean beaches and other areas of public control.

(e) The Congress further finds that the growth policy decisions of the Federal government have a significant impact upon the ecology, the environment and patterns of growth of local communities; that the substance and the nature of a national growth policy should take into consideration the needs and interests of State, regional and local government as well as those of the Federal government, private groups, and individuals and that the Federal growth policy decisions demand greater effective participation by State and local governments so that they are in accord with the highest and best standards of growth policy management and the desires and aspirations of State and local government.

(f) The Congress further finds that there is a national interest in encouraging the several States to exercise their full authority over the planning and regulation of non-Federal lands by assisting the States, in cooperation with local governments, in developing growth policy plans including unified authorities, policies, criteria, standards, methods and procedures for dealing with growth policy decisions of more than local significance.

(g) The Congress further finds that it is an essential quality of effective government that each State establish an agency within the structural framework of the government of that State to administer and coordinate the planning process in relation to its growth.

(h) The Congress further finds that growth policy decisions significantly influence the quality of life within the Nation, and that present State and local institutional arrangements for planning and regulation of growth policy of more than local impact are inadequate with the result that the implementation of standards for the control of air, water, noise and other pollution is impeded.

DECLARATION OF POLICY

SEC. 102. (a) In order to promote the general welfare and to provide full and wise application of the resources of the Federal government in preserving the environmental, economic and social well-being of the people of the United States the Congress declares that it is a continuing responsibility of the Federal government consistent with the responsibility of State and local government to for growth policy planning and management undertake the development of a policy to be known as the National Growth Policy which shall incorporate ecological, environmental, esthetic, economic, social, demographic and other appropriate factors. Such policy shall serve as a guide in making specific decisions at the national level which affect the pattern of environmental, population, and industrial growth, and the development of the Federal lands, and shall provide a framework for development of regional, State, and local growth policy.

(b) The Congress further declares that it is the National Growth Policy to—

(1) favor patterns of growth planning, management, and development which are in accord with sound ecological principles and which encourage intelligent and balanced use of the Nation's resources;

(2) redirect beneficial economic activity and development to all underdeveloped regions of the United States;

(3) disperse economic, racial, demographic, and social patterns or concentrations that are detrimental to the public welfare;

(4) contribute to the revitalization of existing communities and encourage, where appropriate, new communities;

(5) assist the State governments to assume growth policy planning responsibility for activities within their boundaries;

(6) facilitate increased coordination in the administration of public welfare;

(7) facilitate increased coordination in the administration of Federal programs so as to encourage desirable patterns of growth and policy planning; and

(8) systemize methods for exchange of all information relevant to the growth policy in order to assist all levels of government in the development and implementation of the national growth policy.

(c) The Congress further declares that intelligent growth policy planning and management provides the single most important institutional device for preserving and enhancing the environment, for ecologically sound development, and for maintaining conditions capable of supporting a quality of life and providing the material means necessary to maintain a high national standard of living.

PURPOSE

SEC. 103. It is the purpose of this title to—

(1) establish a National Growth Policy to encourage and assist the several States to more effectively exercise their responsibility for the planning, management and administration of the Nation's resources through the development and implementation of comprehensive growth policy plans and management programs designed to achieve an ecologically and environmentally sound use of the Nation's resources;

(2) establish a grant-in-aid program to assist State and local governments to hire and train the personnel and establish the procedures necessary to develop, implement, and administer a statewide growth policy plan which meets Federal guidelines and which will be responsive in dealing with the growing pressure of conflicting demands on a finite resources base;

(3) establish reasonable and flexible Federal guidelines and requirements to give State and regional agencies guidance in the development of growth policy plans;

(4) establish the authority of the National Growth Planning Board as established in title II (hereinafter referred to as the Board) to administer the Federal grant-in-aid program, to review growth policy plans for conformity with the provisions of this title and to assist in the coordination of Federal agency activities with growth policy planning agencies;

(5) develop and maintain a national policy with respect to federally conducted and federally assisted projects having growth policy implications; and

(6) coordinate planning and management relating to Federal lands and resources with planning and management relating to non-Federal lands and resources.

PART II—STATEWIDE AND INTERSTATE GROWTH POLICY PLANNING GRANTS

GRANTS-IN-AID

SEC. 104. (a) In order to carry out the purposes of this title, the Board is authorized to make growth policy planning grants to a State agency, designated by the Governor of the State or established by law, or to an interstate agency, if such agency has statewide, or interstate region, respectively, growth policy planning responsibilities and meets the guidelines and requirements established in section 105 of this title.

(b) Such grants shall be for the purpose of assisting eligible State and interstate agencies to—

(1) prepare and inventory the State's or region's land and growth-related resources;

(2) compile and analyze information and data related to—

(A) population densities and trends;

(B) economic characteristics and projections;

(C) directions and extent of urban and rural growth and changes;

(D) public works, public capital improvements, land acquisitions, economic development programs, projects, and associated activities;

(E) ecological, environmental, geological and physical conditions which are of relevance to decisions concerning the location of new communities, commercial development, heavy industry, transportation facilities, utilities, Federal and State facilities, and other growth policy factors;

(F) the projected growth policy requirements within the State or region for agriculture, recreation, urban growth, housing, commerce, transportation, open space, the generation and transmission of energy, and other important uses for at least 100 years in advance;

(G) governmental organization and financial resources available for growth policy planning and management within the State, and the political subdivisions thereof, or within the region; and

(H) other information necessary to conduct State or region growth policy planning in accord with the provisions of this title;

(3) provide technical assistance, including computer technology, and training programs for appropriate interstate, State and local agency personnel in the development, implementation and management of growth policy planning programs;

(4) arrange with Federal agencies for the cooperative planning of Federal lands located within and near the State's or region's boundaries;

(5) develop, use and encourage common information and data bases for Federal, regional, State and local growth policy planning;

(6) establish arrangements for the exchange of growth policy planning information among State agencies; and among the various governments within each State and their agencies—between the governments and agencies of different States, and among States and interstate agencies and regional commissions;

(7) establish arrangements for the exchange of information with the Federal Government for use by the Board and the State and interstate agencies in discharging their responsibilities under this Act;

(8) conduct public hearings prior to submission of plans to the Board, prepare proposals, and solicit comments on proposals concerning specific portions of the plans and the plans in their entirety;

(9) establish arrangements for public information programs pertaining to the need for immediate national growth policy planning in all governmental sectors; and

(10) utilize for the purpose of furnishing advice to the Federal Government as to whether Federal and federally assisted projects are consistent with the State or region's growth policy program, procedures established pursuant to section 104 of the Demonstration Cities and Metropolitan Development Act of 1966 and title IV of the Intergovernmental Cooperation Act of 1968.

GUIDELINES AND REQUIREMENTS FOR GROWTH POLICY PLANS

SEC. 105. (a) An agency specified in section 104(a) must meet, or give adequate assurance that it will meet, the following requirements in the development of a growth policy plan described in subsection (b) of this section to be eligible for grants under this title. Such agency—

(1) shall be designated by the Governor or established by law if for a single State, or be established by interstate compact if for a region of more than one State, and shall have primary authority and responsibility for the development and administration of the growth policy plan for the State or region;

(2) shall have a competent and adequate interdisciplinary professional and technical staff as well as special consultants who will be available to the agency to develop the plan;

(3) shall to the maximum extent feasible, use pertinent local, State and Federal plans, studies, information data or growth policy planning already available in order to avoid unnecessary repetition of effort and expense; and

(4) shall include equitable representatives of localities involved in the plan.

(b) During the three complete fiscal year periods following the initial publication of regulations by the Board implementing the provisions of this title, such agency must, as a condition of continued grant eligibility, develop a growth policy plan which—

(1) identifies the portions of the State or region subject to enforcement of the plan, which shall include all lands within the boundaries of the State or region except lands the use of which is by law subject solely to the discretion of, or which is held in trust by, the Federal Government, its officers or agents;

(2) identifies areas—

(A) where ecological, environmental, geological, or physical conditions dictate that certain types of growth are undesirable;

(B) which are best suited for agricultural, mineral, industrial, or commercial development;

(C) where transportation and utility facilities are, or should in the future be located;

(D) which furnish the amenities and the basic essentials to the development of new towns and the revitalization of existing communities;

(E) which, notwithstanding Federal ownership or jurisdiction, are important to the State or region for industrial, commercial, mineral, agricultural, recreational, ecological, or other purposes;

(F) which, although located outside the State or region, have substantial, actual, or potential impact upon growth patterns within the State or region; and

(G) which are of unusual national significance and value.

(3) includes appropriate provisions designed to insure that projected requirements for material goods, food, natural resources, energy, housing, recreation, and environmental amenities have been given full and adequate consideration;

(4) includes provisions designed to insure that the plan is consistent with applicable local, State, regional and Federal standards relating to the maintenance and enhancement of the quality of the environment and the conservation of public resources;

(5) provides for assuring orderly and efficient patterns of growth;

(6) includes provisions to insure that transportation and utility facilities are established in compliance with regional and State needs, State policies, and policies and goals set forth in other Federal legislation;

(7) provides for measures such as buffer zones, scenic easements, prohibitions against nonconforming uses, and other means of assuring the preservation of aesthetic qualities to insure that Federally designated, financed and owned areas, including but not limited to elements of the national park system, wilderness areas, and game and wildlife refuges, are not damaged, degraded or in any way adversely affected as a result of inconsistent or incompatible growth patterns in the immediate geographical region;

(8) provides for other appropriate factors having significant growth policy implications;

(9) provides a method for assuring that local regulations do not restrict or exclude development and growth of State or regional benefit;

(10) includes site selection criteria for the location of new communities and a method for assuring appropriate controls over growth around new communities;

(11) provides a method for effectively controlling proposed large-scale development of more than local significance in its impact upon the environment; and

(12) includes a system of controls and regulations pertaining to areas and developmental activities previously listed in this section which is designed to assure that any source of air, water, noise, or other pollution will not be located where it would result in a violation of any applicable air, water, noise or other pollution standard or implementation plan.

(c) To retain eligibility for grants after the end of three complete fiscal years from the beginning of the first fiscal year after the initial publication of regulations by the Board implementing the provisions of this title—

(1) such plan must be approved by the Board in accordance with section 106; and

(2) such agency—

(A) must have authority to implement the approved plan and enforce its provisions, except that in the case of an interstate agency such implementation and enforcement may be carried out by appropriate State agencies;

(B) may have the authority to acquire interests in real property;

(C) must have the authority to prohibit growth in a manner which is inconsistent with the provisions of the plan, except that this requirement need not apply to an interstate agency;

(D) must have the authority to conduct public hearings, allowing full public participation and granting the right of appeal to aggrieved parties, in connection with the dedication of any area subject to restricted or special use under the plan; and

(E) must have reasonable procedures for periodic review of the plan, for purposes of granting variances from and making modifications in the plan, including public notice and hearings, in order to meet changed future conditions and requirements.

(d) Nothing in this section shall be deemed to preclude a State or region from planning for growth or for implementing a plan in stages, with respect to either—

(1) particular geographical areas including but not limited to coastal zones, or

(2) particular kinds of uses, as long as the other requirements of this Act are met.

(e) Nothing in this Act shall be deemed to preclude the delegation to local governmental entities of authority to plan for growth and enforce restrictions on growth adopted pursuant to the plan, including the assignment of funds authorized by this Act, to the extent available, except that —

(1) such agency shall have ultimate responsibility for approval and coordination of local plans and enforcement procedures;

(2) only the plan submitted by such agency will be considered by the Board;

(3) such plan must be consistent with the guidelines established by this Act; and

(4) such agency shall be responsible to the Board for the management and control of any Federal funds assigned or delegated to any local government or other entity within the State or region concerned.

REVIEW OF PLANS

SEC. 106. (a) Upon completion of each growth policy plan—

(1) the agency responsible for the development of the plan shall submit it to the Board;

(2) the Board shall submit the plan for review and comments to those Federal agencies the Board considers to have significant interest in or impact upon growth within the State or region concerned, and a period of ninety days shall be provided for the review; and

(3) upon completion of the review period established by clause (2) of this subsection, the Board shall review the plan along with the agency comments and approve the plan if it—

(A) conforms with the policy, guidelines, and requirements declared in this title;

(B) is compatible with the plans and proposed plans of other States and regions, so that regional and national growth policy considerations are accomodated; and

(C) does not conflict with the objectives of Federal programs authorized by law.

(b) Modifications may be made or variances granted in any growth policy plan unless such modification or variance renders the plan inconsistent with the policies, guidelines, and other requirements in this Act. Provisions for such modifications or variances shall be included in the plan as reported to the Board. The Board shall approve such provisions unless they cause the plan to no longer meet the criteria set forth in subsection (a).

(c) In the event the Board determines that grounds exist for disapproval of a growth policy plan or, having approved such a plan, subsequently determines that grounds exist for withdrawal of such approval pursuant to section 111, it shall notify the President, who shall establish an ad hoc hearing board, the membership of which shall consist of—

(1) the Governor of a State other than the State or States included in the plan, whose State does not have a particular interest in the approval or disapproval of the plan, or such alternate person as is designated by such Governor;

(2) one knowledgeable, impartial Federal official, who is not a member of or responsible to a member of the Board;

(3) One knowledgeable, impartial private citizen, selected by the other two members, except that if such members cannot agree upon a third member within ten days after the appointment of the second member to be appointed, the third member shall be selected by the President.

(d) The hearing board shall meet as soon as practicable after all three members have been appointed. The Board shall specify in detail to the hearing board its reasons for considering disapproval or withdrawal of approval of the plan. The hearing board shall hold such hearings and receive such evidence as it deems necessary. The hearing board shall then determine whether disapproval or withdrawal of approval would be reasonable, and set forth in detail the reasons for its determination. If the hearing board determines that the proposed action of the Board is unreasonable, the Board shall terminate such proposed action.

(e) Members of hearing boards who are not regular full-time officers or employees of the United States shall, while carrying out their duties as members, be entitled to receive compensation at a rate fixed by the President, but not exceeding $100 per diem, including travel time, and while away from homes or regular places of business they may be allowed travel expenses, including per diem in lieu of subsistence as authorized by law for persons in Government service employed intermittently. Expenses shall be charged to the account of the Executive Office of the President.

(f) Administrative support for hearing boards shall be provided by the Executive Office of the President.

(g) The President may issue such regulations as may be necessary to carry out the provisions of this section.

COORDINATION OF FEDERAL PROGRAMS

SEC. 107. (a) All Federal departments and agencies, including the Office of Management and Budget, conducting or supporting activities affecting growth in an area subject to an approved growth policy plan shall operate in accordance with the plan. In the event that a departure from the plan appears necessary in the national interest, the agency shall submit the matter to the Board. The Board may approve a Federally conducted or supported project a portion or portions of which may be inconsistent with such a plan if it finds that—

(1) the project is essential to the national interest; and

(2) there is no reasonable and prudent alternative which would be consistent with the plan. In the event, the Board fails to approve the project, the project may be undertaken only upon the express approval of the President. The President may approve projects inconsistent with an approved growth policy plan only when overriding consideration of national policy requires such approval.

(b) State and local governments submitting applications for Federal assistance for activities having significant growth policy implications in an area subject to an approved growth policy plan shall submit a statement of the views of the agency administering such plan as to the consistency of such activities with the plan. Federal agencies shall not approve proposed subjects that are inconsistent with the plan.

(c) All Federal agencies responsible for administering grant, loan or loan guarantee programs for activities that influence patterns of growth, including but not limited to home mortgage and interest subsidy programs, shall take cognizance of approved growth policy plans and shall administer such programs so as to enable them to support controlled growth;

(d) Federal agencies conducting or assisting public works projects in areas not subject to an approved growth policy plan shall, to the extent practicable, conduct those activities in accord with sound public works investment policies so as to minimize any adverse environmental or social impact resulting from decisions concerning growth policy.

(e) Officials of the Federal government charged with responsibility for the management of Federally owned lands shall take cognizance of the planning efforts of growth policy planning agencies of States or regions within which or near the boundaries of which such Federal lands are located and shall coordinate Federal growth policy planning to the extent such coordination is practicable and not inconsistent with paramount national policies, programs and interest.

PART III—ADMINISTRATION OF GROWTH POLICY PLANNING GRANTS ALLOTMENTS

SEC. 108. (a) From the sum appropriated pursuant to section 203 the Board is authorized to make grants to agencies eligible for assistance under this title in an amount not to exceed 90 per centum of the estimated cost of developing growth policy plans during three full fiscal years after the initial publication by the Board of regulations implementing the provisions of this title. Thereafter, grants may be made in an amount not to exceed two-thirds of such agency's costs of administering such plans.

(b) Such grants shall be allocated in accordance wtih regulations of the Board which shall take into consideration the amount and nature of resource base populations, pressures resulting from growth, financial need, and other relevant factors.

(d) Any such grant shall provide for an increase and not replace growth policy planning activities. Any such grant shall be in addition to and may be used jointly with, grants or other funds available for growth policy planning surveys, or investigations under other federally assisted programs.

(e) Not more than 5 per centum of any funds granted pursuant to this Act to any planning agency in any fiscal year may be expended for the acquisition of any interest in real property.

PAYMENTS

SEC. 109. The method of computing and paying amounts pursuant to this title shall be as follows:

(1) the Board shall, prior to the beginning of each calendar quarter or other period prescribed by it, estimate the amounts to be paid to each agency under the provisions of this title for such period, such estimate to be based on such records of the agency and information furnished by it, and such other investigation, as the Board may find necessary; and

(2) the Board shall pay to the agency from the allotment available to such agency the amounts so estimated for such period, reduced or increased as the case may be, by any sum (not previously adjusted under this paragraph) by which it finds that its estimate of the amount to be paid such agency for any period under this title was greater or less than the amount which would have been paid to such agency for such prior period under this title. Such payments shall be made through the disbursing facilities of the Treasury Department at such times and in such installments as the Board may determine.

FINANCIAL RECORDS

SEC. 110. (a) Each recipient of a grant under this Act shall keep such records as the Board shall prescribe, including records which fully disclose the amount and disposition of the funds received under the grant, and the total cost of the project or undertaking in connection with which the grant was made and the amount and nature of that portion of the cost of the project or undertaking supplied by other sources, and such other records as will facilitate an effective audit.

(b) Such other records shall be kept and made available and such reports and evaluations shall be made as the Board may require regarding the status and application of Federal funds made available under the provisions of this title.

(c) The Board and the Comptroller General of the United States, or any of their duly authorized representatives, shall have access for the purpose of audit and examination to any books, documents, papers and records of the recipient of the grant that are pertinent to the determination that funds granted were used in accordance with this Act.

TERMINATION OF ASSISTANCE

SEC. 111. (a) The Board shall have authority to terminate any financial assistance under this title and withdraw its approval of a growth policy plan, whenever, after the agency concerned has been given notice of a proposed termination and an opportunity for hearing, the Board finds that—

(1) such agency has failed to adhere to the guidelines and requirements of this title in the development of the plan;

(2) the plan has not been implemented in accordance with section 105(c) or otherwise fails to meet the requirements of this title; or

(3) the plan has been so changed or so administered that it no longer complies with the requirements of this title.

SANCTIONS FOR NONCOMPLIANCE

SEC. 112. (a). After the end of three fiscal years from the beginning of the first fiscal year after the initial issuance of regulations by the Board implementing the provisions of this Act, no Federal agency shall, except with respect to Federal lands, propose or undertake any new action or financially assist any new State-administered action which may have a substantial adverse environmental impact or that would or would tend to irreversibly or irretrievably affect substantial growth in any area which is not covered by a growth policy plan submitted in accordance with this Act.

(b) Upon application by the Governor of a State or head of the Federal agency concerned, the President may temporarily suspend the operation of subsection (a) with respect to any particular action, if he deems such suspension necessary for the public health, safety, or welfare: *Provided*, That no such suspension shall be granted unless a schedule for the area concerned, acceptable to the Board, is submitted: *And provided further*, That no subsequent suspension shall be granted unless due diligence has been exercised to comply with the terms of that schedule.

TITLE II—NATIONAL GROWTH PLANNING BOARD

SEC. 201. (a) There is hereby established a National Growth Planning Board (hereinafter referred to as the "Board"). The Board shall consist of seven members appointed by the President, by and with the advice and consent of the Senate, from among individuals with special qualifications to carry out the functions of the Board. Four members of the Board shall constitute a quorum. The

Board shall annually elect a chairman from among its members.

(b) Each member of the Board shall serve for a term of six years, except that—

(1) the members first taking office shall serve as designated by the President, two for terms of two years, two for terms of four years, and three for terms of six years; and

(2) any member appointed to fill a vacancy shall serve for the remainder of the term for which his predecessor was appointed.

(c) Members of the Board shall be compensated at the rate provided for level III of the Executive Schedule Pay Rates in title 5 of the United States Code.

RESEARCH

SEC. 202. The Board shall—

(1) prepare an inventory of all resources in the United States;

(2) make a continuing study of those resources, with projections of development and growth, and an analysis thereof; and

(3) study the efficiency of growth policy planning agencies.

AUTHORITY

SEC. 203. The Board shall have the authority to establish principles, standards, and procedures for planning agencies receiving grants pursuant to this Act.

REVIEW OF PLANS

SEC. 204. Upon receipt of a plan or revision thereof from a planning agency under the provisions of this Act, the Board shall review the plan, and may revise it, with regard to—

(1) the efficiency of such a plan or revision in achieving efficient growth in the area involved;

(2) the effect of the plan on the Nation's physical resources including water, air, land, agriculture, fish and wildlife, asthetics, timber, national parks, seashores, estuaries, energy, housing, industrial production and transportation, human resources including population, employment and immigration, and other resources of the entire Nation; and

(3) the contributions which such plan or revision will make in attaining the Nation's economic, social, and environmental goals. Based on such review the Board shall—

(A) formulate such recommendations as it deems desirable in the national interest; and

(B) transmit its recommendations with respect to such plan or revision to the President for his review and subsequent transmittal to Congress with his recommendation for authorization of projects.

CONSULTATION AND REVIEW

SEC. 205. The Board shall—

(1) consult with other Federal officials responsible for the administration of Federal growth policy planning assistance programs to States, their political subdivisions, and other eligible agencies in order to enhance coordination; and

(2) periodically review provisions of growth policy plans, to the extent necessary or desirable for the proper administration of this Act.

## TITLE III—MISCELLANEOUS PROVISIONS

EFFECT OF EXISTING LAWS

SEC. 301. (a) Nothing in this Act shall be construed—

(1) to expand or diminish either Federal or State jurisdiction, responsibility, or rights in the field of growth policy planning, development, or control; nor to displace, supersede, limit, or modify any interstate compact or the jurisdiction or responsibility of any legally established joint or common agency or two or more States, or of two or more States and the Federal government; nor to limit the authority of Congress to authorize and fund projects;

(2) to change or otherwise affect the authority or responsibility of any Federal official in the discharge of duties of his office except as required to carry out the provisions of this Act;

(3) as superseding, modifying, or repealing existing laws applicable to the various Federal agencies which are authorized to develop or participate in the development of resources or to exercise licensing or regulatory functions in relation thereto, except as required to carry out the provisions of this Act.

(b) Nothing herein shall be interpreted to extend the territorial jurisdiction of any State.

(c) Nothing herein shall be construed to imply Federal consent to or approval of any State or local actions which may be required or prohibited by other Federal statutes or regulations.

DEFINITIONS

SEC. 302. For the purposes of this Act—

(1) the term "State" means a State, the District of Columbia, the Commonwealth of Puerto Rico, or any territory or possession of the United States;

(2) the term "interstate agency" means any interstate compact agency established in accordance with Federal law;

(3) the term "growth policy" means a policy which favors patterns of growth and economic development and stabilization which offer a range of alternative locations and encourage the wise and balanced use of physical and human resources in the Nation; fosters the continued economic strength of all parts of the Nation; helps reverse trends of migrations and physical growth which reinforce disparities among States, regions, and cities; treats comprehensively the problems of poverty and employment (including the erosion of tax bases and the need for better community services and job opportunities) which are associated with disorderly urbanization and rural decline; refines the role of the Federal Government in developing new towns and revitalizing existing communities; strengthens the capacity of general governmental institutions to contribute to balanced and efficient growth, and facilitates increased coordination of Federal, regional, State, and local activities so as to encourage orderly growth, the prudent use of natural resources, and the protection of the physical environment; and

(4) the term "resources" includes both physical resources, including water, air, land, agriculture, fish and wildlife, aesthetics, timber, national parks, seashores, estuaries, energy, housing, industrial production, and transportation, and human resources, including population, employment, and immigration.

AUTHORIZATION OF APPROPRIATIONS

SEC. 303. (a) There are authorized to be appropriated not more than $30,000,000 annually for the administration of this Act, not more than $20,000,000 of which may be used for contract studies.

(b) There are authorized to be appropriated not more than $300,000,000 annually for grants to planning agencies pursuant to this Act.

ADMINISTRATIVE PROVISIONS

SEC. 304. (a) For the purpose of carrying out the provisions of this Act, the Board may—

(1) hold such hearings, sit and act at such times and places, take such testimony, receive such evidence, and print or otherwise reproduce and distribute so much of its proceedings and reports thereon as it may deem advisable;

(2) acquire, furnish, and equip such office space as is necessary;

(3) use the United States mails in the same manner and upon the same conditions as other departments and agencies of the United States;

(4) employ and fix compensation of such personnel as it deems advisable;

(5) procure services as authorized by section 3109 of title 5 of the United States Code at rates not to exceed $100 per diem for individuals;

(6) purchase, hire, operate and maintain passenger motor vehicles; and

(7) incur such necessary expenses and exercise such other powers as are consistent with and reasonably required for the performance of its functions under this Act.

(b) Any member of the Board is authorized to administer oaths when it is determined by a majority of the Board that testimony shall be taken or evidence received under oath.

(c) To the extent permitted by law, all appropriate records and papers to the Board may be made available for public inspection during ordinary office hours.

(d) The Board shall be responsible for the appointment and supervision of its personnel, the assignment of duties and responsibilities among such personnel, and the use and expenditure of funds.

DELEGATION OF FUNCTIONS

SEC. 305. For the purposes of this Act—

(1) the Board is authorized to delegate to the chairman of the Board its administrative functions including the detailed administration of the grant programs; and

(2) the Board may not delegate the responsibilities of a policy nature vested in it by this Act.

UTILIZATION OF PERSONNEL

SEC. 306. (a) The Board may, with the consent of the head of any other department or agency of the United States, utilize such officers and employees of such agency on a reimbursable basis as are necessary to carry out the provisions of this Act.

(b) Upon the request of the Board, the head of any Federal department or agency is authorized—

(1) to furnish to the Board such information as may be necessary for carrying out its functions and as may be available to or procurable by such department or agency; and

(2) to detail to temporary duty with the Board on a reimbursable basis such personnel within his administrative jurisdiction as the Board may need or believe to be useful for carrying out its functions, each such detail to be without loss of seniority, pay or other employee status.

TECHNICAL ASSISTANCE

SEC. 307. The Board may provide technical assistance to any eligible planning agency to assist it in the performance of its functions pursuant to this Act.

AVAILABILITY OF FEDERAL EXPERTISE

SEC. 308. Federal agencies with data or expertise relative to factors which affect growth shall take appropriate measures to make such data or expertise available to planning agencies for use in preparation, implementation and revision of growth policy plans for the purposes of this Act.

REPORTS AND EVALUATIONS

SEC. 309. Any interstate, State, or local agency receiving a grant under this Act, either directly or through another such agency, shall make such reports and evaluations in such form, at such times, and containing such information as the Board may require for the purposes of this Act, and shall keep and make available such records as may be required by the Board for the verification of such reports and evaluations.

STUDIES

SEC. 310. The Board may, by contract or otherwise, make studies and publish information on subjects related to State, regional and national growth policy planning and resource use for the purposes of this Act.

GUIDELINES

SEC. 311. The President is authorized to designate an agency or agencies to issue guidelines to Federal departments and agen-

cies to assist them in carrying out the requirements of this Act.

RULES AND REGULATIONS

SEC. 312. The Board, except with respect to subsection (c) of section 106 shall—

(1) promulgate rules and regulations for the administration of this Act, including the detailed terms and conditions under which grants may be made;

(2) prescribe with the approval of the President, such rules, establish such procedures, and make such arrangements and provisions relating to the performance of its functions under this Act and the use of funds available therefor, as may be necessary in order to assure—

(A) coordination of the program authorized by this Act with related Federal planning assistance programs, including the program authorized under section 701 of the Housing Act of 1954, and

(B) appropriate utilization of other Federal departments and agencies administering programs which may contribute to achieving the purposes of this Act; and

(3) make such other rules and regulations as it may deem necessary or appropriate for carrying out its duties and responsibilities under the provisions of this Act.

RESOURCE INVENTORY AND OTHER STUDIES

SEC. 313. The Chairman of the Board shall—

(1) prepare an inventory and maintain a continuing study of the resources of the United States, and report biennially to the President and the Congress on resources and uses, projections of growth, and uses of land, and analyses of current and emerging problems of growth policy;

(2) maintain a continuing study of the adequacy of administrative and statutory means for the coordination of Federal programs which have an impact upon growth and of the compatibility of such programs with interstate, State, and local growth policy planning and management activities; and

(3) appraise the adequacy of existing and proposed Federal policies and programs which affect growth, and make recommendations to the President with respect to such policies and programs.

DIRECTION TO FEDERAL DEPARTMENTS AND AGENCIES

SEC. 314. All Federal departments and agencies shall, as a part of their planning procedures on projects involving a major growth policy activity, consult with the Board for the purpose of determining whether the proposed activity would conflict in any way with the plans of other Federal, State, or local agencies. In the event a conflict is discovered, the matter shall be reported to the Board. If the conflict is not resolved by the agencies involved within a reasonable period of time, the Board shall investigate the conflict and report its findings along with a recommendation concerning the proper resolution of the issue, to the Congress, the President, and any State or local agency concerned.

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SECTION-BY-SECTION ANALYSIS OF A BILL: TO PROVIDE FEDERAL ASSISTANCE TO THE STATES FOR GROWTH POLICY PLANNING

Short Title—"National Growth Policy Planning Act."

TITLE I—NATIONAL GROWTH POLICY PLANNING AND PROGRAM OF ASSISTANCE TO THE STATES

*Part I—Findings, policy and purpose*

Sec. 101. Finds that there is an immediate national interest in an efficient and comprehensive system of growth policy planning and decision-making; a failure to conduct competent, ecologically sound growth policy planning; that many Federal agencies are involved in growth policy planning and management activities which has resulted in needless, undesirable and costly conflicts between agencies; that there is a National interest in encouraging the States to exercise their full authority over the planning and regulation of growth policy plans; that each State should have an agency to administer and coordinate the planning process in relation to its growth; that growth policy decisions influence the quality of life within the Nation, and that the present State and local institutional arrangements for planning and regulating growth policy of more than local impact are inadequate with the result that the implementation of standards for the control of air, water, noise, and other pollution is impeded.

Sec. 102. Declares that in order to promote the general welfare and to provide full application of resources, the Nation should undertake the development of a policy to be known as the National Growth Policy which shall provide a framework for development of a regional, state, and local growth policy.

Sec. 103. It is the purpose of this title to establish a National Growth policy, establish a grant-in-aid program, establish Federal guidelines and requirements, establish the authority of the National Growth Planning Board, develop and maintain a National Policy with respect to federally conducted and assisted projects that have growth implications, and to coordinate planning and management.

*Part II—Statewide and interstate growth planning grants*

Sec. 104. Grants in aid. To carry out the provisions of the act, the Board is authorized to make growth policy planning grants to an appropriate agency which has growth policy planning responsibilities and which meets the guidelines and requirements.

Sec. 105. Guidelines and Requirements for Growth Policy Plans. An agency must meet the following requirements to be eligible for grants: 1) be designated by the Governor or by an established agency of an interstate compact and shall have primary authority and responsibility for the growth policy plan; 2) have professional and technical staff as well as special consultants; 3) utilize existing information; and 4) involve representatives of the locality in the plan. Within three complete fiscal years after the initial publication of regulations by the Board, the agency must develop a growth policy plan. To retain eligibility for grants, after three complete fiscal years after the initial publication of regulations by the Board, the plan must be approved by the Board, the agency must have the authority to implement the plan, acquire interests in real property, prohibit growth that is inconsistent with the provisions of the plan, conduct public hearings and make procedures for periodic review.

Sec. 106. Review of Plans. The agency shall submit the plan to the Board. Then the Board shall submit the plan to those Federal agencies the Board considers to have interest in or impact upon growth within the area concerned, for review and comments. Upon completion of the review period, the Board shall review the plan along with the agency comments and approve the plan. Modifications may be made or variances granted in any growth policy plan unless those changes make the plan inconsistent with this Act. If the Board disapproves of the plan, the President may establish an ad hoc hearing board to review the plan.

Sec. 107. Coordination of Federal Programs. All Federal agencies conducting or supporting activities affecting growth in an area subject to an approved growth policy plan, shall operate in accordance with that plan. Submitted along with the plan shall be a statement of the views of the agency administering such plan as to the consistency of such activities with the plan. All Federal agencies responsible for administering financial assistance, conducting or assisting public works projects and responsible for management of federally owned lands shall take cognizance of approved growth policy plans so as to enable support of controlled growth.

*Part III—Administration of growth policy planning grants*

Sec. 108. Allotments. Grants are made to agencies in an amount not to exceed 90 percent of the estimated costs of developing the plans during the three full fiscal years after the initial publication of regulations. Thereafter, the grants may be made in an amount not to exceed two-thirds of such agency's costs of administering such plans.

SEC. 109. Payments. The Board shall estimate the amounts to be paid in grants and these may be increased or decreased. It shall be done through the disbursing facilities of the Treasury Department.

Sec. 110. Financial Records. All recipients of financial assistance shall make record of the disposition and amount of the funds received under the grant, and the total cost of the project or undertaking. All records shall be made available for reports and evaluations.

Sec. 111. Termination of Assistance. The Board has the authority to terminate any assistance and withdraw its approval of a plan, whenever the Board finds that the agency has failed to follow guidelines and requirements, the plan has not been implemented, or the plan has been changed so that it no longer complies with the requirements of this Act.

Sec. 112. Three years after the initial issuance of regulations by the Board implementing the act, no Federal agency shall assist any State action which would have a substantial adverse environmental impact or substantially affect growth in an area, if a growth policy plan has not been submitted by the State.

TITLE II—NATIONAL GROWTH PLANNING BOARD

Sec. 201. The Board shall consist of seven members, appointed by the President, with the advice and consent of the Senate; for terms of six years; and compensated at the rate approved for level III of the Executive Schedule Pay Rates.

Sec. 202. Research. They shall prepare an inventory of all resources, make a continuing study of those resources, with projections of development and growth, and an analysis thereof, and study the efficiency of growth policy planning agencies.

Sec. 203. Authority. The Board may establish principles, standards, and procedures for planning agencies receiving grants pursuant to this Act.

Sec. 204. Review of Plans. The Board has primary responsibility for review of the agency plan or revision.

Sec. 205. Consultation and Review. The Board shall consult with the Federal agencies concerned with growth policy planning and assistance programs and make periodic review of the provisions of the plans, to the extent necessary for the proper administration of the Act.

TITLE III—MISCELLANEOUS PROVISIONS

Sec. 301. Effects on Existing Laws. None.

Sec. 302. Definitions. "Growth policy" means a policy which favors patterns of growth and economic development and stabilization which offered a range of alternative locations and encourage the wise and balanced use of physical and human resources in the Nation; fosters the continued economic strength of all parts of the Nation; helps reverse trends of migrations and physical growth which reinforce disparities among states, regions, and cities; treats comprehensively the problems of poverty and employment (including the erosion of tax bases and the need for better community services and job opportunities) which are associated with disorderly urbanization and rural decline; refines the role of the Federal government in developing new towns and revitalizing existing communities; strengthens the capacity

of general governmental institutions to contribute to balanced and efficient growth and facilitates increased coordination of Federal, regional, state, and local activities so as to encourage orderly growth, the prudent use of natural resources and the protection of the physical environment.

"Resources" means both physical resources and human resources.

Sec. 303. Authorization of Appropriations. For administration, $30 million, $20 million of which can be used for contract studies; $300 million for grants to planning agencies.

Sec. 304. Administrative Provisions. The Board shall hold hearings, acquire office space, use the U.S. mail, employ and fix compensation for personnel, procure services, operate motor vehicles; Board members are authorized to administer oaths; records and papers of the Board may be made available for inspection; and the Board is responsible for personnel activities and duties, and use and expend funds.

Sec. 305. Delegation of Functions. The Chairman is responsible for administrative functions including the detailed administration of the grant program and the Board shall not delegate any responsibilities of a policy nature.

Sec. 306. Utilization of Personnel.

Sec. 307. Technical Assistance.

Sec. 308. Availability of Federal Expertise.

Sec. 309. Reports and Evaluations.

Sec. 310. Studies.

Sec. 311. Guidelines. The President is authorized to designate any agency or agencies to issue guidelines to Federal departments and agencies to assist them in carrying out the requirements of this Act.

Sec. 312. Rules and Regulations.

Sec. 313. Resource Inventory and Other Studies.

Sec. 314. Direction to Federal Departments and Agencies. All Federal departments and agencies shall consult with the Board for the purpose of determining whether the proposed activity would conflict in any way with the plans of any other Federal, State, or local agency.

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By Mr. BROOKE:

S. 3601. A bill providing reimbursement to States and political subdivisions for police and National Guard overtime compensation incurred with respect to national disturbances. Referred, by unanimous consent, to the Committee on the Judiciary; and, if and when reported by that committee, to the Committee on Armed Services, if so desired by that committee.

Mr. BROOKE. Mr. President, local law enforcement agencies, courts and the National Guard across the Nation increasingly have been faced with the need to respond to demonstrations protesting national policies.

In most instances, I am pleased to say, those demonstrations have been peaceful. Citizens, whether they agree or disagree with the purpose of a demonstration, have behaved in a responsible manner. Only infrequently have demonstrations gotten out of hand, necessitating arrest or other use of force.

Yet any large gathering of people embodies within it the possibility of violence or disorder. Any gathering, therefore, necessitates extraordinary police precautions, and sometimes extra court action as well.

Demonstrations are not confined to large cities and college campuses. They can occur, and have occurred with increasing regularity, in towns and cities of every size and description across this country. Municipal, county, and State law enforcement agencies have been called upon to perform tasks which were virtually unforeseen and for which no provision could have been made in the agencies' budgets.

Mr. President, towns and cities, counties and States, should not be required to allocate from their meager income, funds to pay police, court, and National Guard overtime when that additional time is required to handle demonstrations or disorders occasioned by national policy.

To require States and localities to pay these additional costs is to require them to take dollars away from schools, hospitals, fire departments, sewage collection, and other vital local services. State and local taxes are collected to pay for State and local needs. They should not, and cannot, be applied to meet national needs as well.

The legislation I introduce today seeks to correct this flaw. It would authorize the Attorney General of the United States to reimburse State and local governments for overtime paid to law enforcement officers, and court personnel in the performance of duties connected with protests against national policy, and for similar compensation by the Department of Defense in the case of the National Guard.

Under this legislation, any community in which a deminstration occurs protesting a policy of the Federal Government, can apply to the Department of Justice for reimbursement of overtime expenditures for its law enforcement officers and court personnel, and to the Department of Defense for reimbursement of the National Guard. This reimbursement would have to be forthcoming as soon as practicable after the submission of a voucher by the applicant.

Reimbursement would not be limited to demonstrations against foreign policy, although foreign policy considerations obviously have precipitated the introduction of this bill. Demonstrations against Federal policies governing busing, environmental issues, public works projects, or any other Federal program against which citizens might protest, would also be covered by this legislation.

Mr. President, the legislation is desperately needed. State and local tax revenues are already inadequate to meet the burdens placed upon these governments. Many cities and towns are on the verge of bankruptcy, unable to provide even basic services to their residents. Overtime for law enforcement officials responding to demonstrations may well be the proverbial straw that breaks their financial backs.

Yet an amount which may be decisive at the local level may better be accommodated within the Federal budget. Not only is the Federal Government in a better position financially to meet these requirements, but I believe it has a clear moral and political responsibility as well to pay for costs incurred in protests against national policy.

Mr. President, I ask unanimous consent that the text of the bill be printed at this point in the RECORD, and I urge that it receive prompt and favorable consideration.

There being no objection, the bill was ordered to be printed in the RECORD, as follows:

S. 3601

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That (a) chapter 31 of title 28, United States Code, is amended by adding at the end thereof the following new section:

"§ 527. Reimbursement for police, National Guard and court employee overtime compensation incurred with respect to disturbances relating to national policy.

"(a) Upon request of any State or political subdivision thereof, the Attorney General is authorized to reimburse as soon as practicable, such State or political subdivision for overtime compensation determined by the Attorney General to have been paid by that State or political subdivision to any law enforcement officer or employee of a court of that State as the result of overtime work performed by such officer or member with respect to any demonstration, riot, or other disturbance related to any national issue or policy.

"(b) The Attorney General is authorized to promulgate rules and regulations to carry out this section.

"(c) Upon request of any State or political subdivision thereof, the Secretary of Defense is authorized to reimburse as soon as practicable, such State or political subdivision for overtime compensation determinded by the Secretary to have been paid by that State or political subdivision to any member of the National Guard as the result of overtime work performed by such officer or member with respect to any demonstration, riot, or other disturbance related to any national issue or policy.

"(d) The Secretary is authorized to promulgate rules and regulations to carry out this section.

"(e) For purposes of this section, 'State' includes the several States of the Union, the District of Columbia, the Commonwealth of Puerto Rico, and any other territory or possession of the United States."

(f) The analysis of such chapter 31, preceding section 501, is amended by adding at the end thereof the following new item:

"527. Reimbursement for police, National Guard and court employee overtime compensation incurred with respect to disturbances relating to national policy.

Mr. ROBERT C. BYRD. Mr. President, I ask unanimous consent that the bill which was just introduced by the Senator from Massachusetts (Mr. BROOKE), to provide reimbursement for States and political subdivisions for police and National Guard overtime compensation, and so forth, be referred to the Judiciary Committee; and that if and when reported from that committee, the bill be referred to the Committee on Armed Services for consideration of any matters therein under the jurisdiction of that committee, if that committee should seek jurisdiction.

The PRESIDING OFFICER. Without objection, it is so ordered.

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By Mr. FULBRIGHT (by request):

S.J. Res. 231. A joint resolution to authorize the appropriation for the contribution by the United States for the support of the International Agency for Research on Cancer. Referred to the Committee on Foreign Relations.

Mr. FULBRIGHT. Mr. President, by request, I introduce for appropriate reference a joint resolution providing for

payment by the United States of annual contributions to the International Agency for Research on Cancer.

The resolution has been requested by the Assistant Secretary of State for Congressional Relations and I am introducing it in order that there may be a specific bill to which Members of the Senate and the public may direct their attention and comments.

I reserve my right to support or oppose this joint resolution, as well as any suggested amendments to it, when the matter is considered by the Committee on Foreign Relations.

I ask unanimous consent that the joint resolution be printed in the RECORD at this point, together with the letter from the Assistant Secretary of State dated May 3, 1972, to the Vice President, and the memorandum accompanying the joint resolution.

There being no objection, the material was ordered to be printed in the RECORD, as follows:

S.J. RES. 231

*Resolved by the Senate and House of Representatives of the United States of America in Congress assembled,* There is hereby authorized to be appropriated such sums as may be necessary for the annual payment by the United States of its share of the expenses of the International Agency for Research on Cancer as determined in accordance with Article VIII of the Statute of the International Agency for Research on Cancer.

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DEPARTMENT OF STATE,
*Washington, D.C., May 3, 1972.*

Hon. SPIRO T. AGNEW,
*President of the Senate,*
*Washington, D.C.*

DEAR MR. PRESIDENT: I submit herewith a proposed draft Joint Resolution, providing for payment by the United States of annual contributions to the International Agency for Research on Cancer.

The Statute of the Agency entered into force in 1965, with the United States as one of the original members. Up to now the annual contribution has been funded under the authority of the Foreign Assistance Act. The Agency has now been operational long enough for a determination that continued U.S. participation is beneficial to the U.S. national program of cancer research. The proposed legislation would provide continuing authorization for a U.S. contribution to be financed in the State Department Appropriation Act.

A memorandum describing the Agency and its work is enclosed.

The Department has been advised by the Office of Management and Budget that, from the standpoint of the Administration's program, there is no objection to the submission of this proposal to the Congress for its consideration.

Sincerely yours,

DAVID M. ABSHIRE,
*Assistant Secretary for Congressional Relations.*

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MEMORANDUM TO ACCOMPANY PROPOSED JOINT RESOLUTION PROVIDING FOR PAYMENT BY THE UNITED STATES OF AN ANNUAL CONTRIBUTION TO THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER

The International Agency for Research on Cancer (IARC) was established in Lyon, France on May 20, 1965, by the 18th World Health Assembly of the World Health Organization. (Copy of Resolution 18.44 attached).

The five original members of the Agency were France, the Federal Republic of Germany, Italy, the United Kingdom, and the United States. The present membership includes Australia, Belgium, the Netherlands and the USSR in addition to the original five.

In deciding to participate in the Agency for a trial period, the U.S. believed that an effective international cancer research agency might both correlate work being done elsewhere and undertake basic field studies in other countries. Since cancer was the second leading cause of death in the United States, it was recognized that such activities to supplement our own efforts to determine the causes of cancer could be of great value to the American people.

However, it was not certain whether the Agency would in fact be able to achieve its potential. Therefore, a decision on continuing U.S. participation was deferred pending review of actual Agency operations. During the trial period, the U.S. annual contribution has been financed from funds appropriated for voluntary contributions to international organizations and programs as authorized by Part I, Chapter 3 of the Foreign Assistance Act of 1961, as amended.

The Agency has now been operating for seven years. Its programs and methods are practical applications of its stated objectives, which are:

a) to collect and disseminate information on the epidemiology of cancer, on cancer research, and on the causation and prevention of cancer;

b) to consider proposals and prepare plans for cancer research; and;

c) to train personnel for cancer research.

In addition the Agency carries out special projects such as pilot demonstrations of cancer prevention.

A considered judgment has been made that continued U.S. membership in the Agency complements the national program of cancer research. The Director of the National Cancer Institute has written:

"In its brief years of existence the IARC has assumed major importance in the worldwide effort against cancer. The Agency, with headquarters in Lyon, France, is concentrating on joint investigations of the patterns and characteristics of cancers that occur in many areas of the world. The studies focus on research that is international in nature. One such study is focused on determining the possible relation between virus and cancers that occur in various areas of the Far East and Africa. U.S. scientists need data from this type of study and can not obtain the information unilaterally. This study can be expected to yield information that will benefit scientists of the U.S. and of other countries of the world. With the recent passage of the National Cancer Act of 1971, support of the IARC has taken on even greater significance. The President, who has taken personal interest in the nation's cancer resarch effort, has enthusiastically endorsed the Act which includes a provision providing specifically for support of '. . . research in the cancer field outside the U.S. . . . which can be expected to inure to the benefit of the American people. . . .' "

With a decision to continue U.S. membership, legislation is being requested to enable our annual contribution to be funded from the State Department budget under "Contributions to International Organizations." Each member originally paid $150,000 annually. Effective in calendar year 1971, however, the equal annual contributions were supplemented by additional amounts based on percentage assessments for the budget of the World Health Organization. The U.S. contribution in 1971 was $312,352 and will be $336,789 in 1972. It is estimated that it will increase to about $420,000 in 1975.

U.S. participation in the Agency is coordinated with our national program, and the Director of the National Cancer Institute has been regularly delegated as the United States Delegate to the meetings of the Agency's Governing Council.

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ESTABLISHMENT OF AN INTERNATIONAL AGENCY FOR RESEARCH ON CANCER

RESOLUTION WHA18.44 OF THE EIGHTEENTH WORLD HEALTH ASSEMBLY

The Eighteenth World Health Assembly,

Cognizant of Article 18 of the Constitution which provides, *inter alia,* that one of the functions of the Health Assembly shall be to establish such other institutions as it may consider desirable, with a view to promoting and carrying on research;

Considering that the Governments of the Federal Republic of Germany, France, Italy, the United Kingdom of Great Britain and Northern Ireland, and the United States of America have agreed to sponsor the creation and to participate in the functioning of an International Agency for Research on Cancer in accordance with the provisions of its Statute;

Considering that many governments have expressed their interest in the creation of such an Agency; and

Considering resolution WHA17.49 of the Seventeenth World Health Assembly.

Decides to establish an International Agency for Research on Cancer which shall carry on its functions in accordance with the provisions of its Statute (annexed).

*Twelfth plenary meeting, 20 May 1965.*

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## ADDITIONAL COSPONSORS OF RESOLUTIONS

At the request of Mr. CHILES, the Senator from Tennessee (Mr. BAKER) was added as a cosponsor of Senate Resolution 232, expressing the sense of the Senate that the remainder of the amount appropriated for the rural electrification program for fiscal 1972 be released immediately by the Office of Management and Budget.

SENATE RESOLUTION 273

At the request of Mr. HART, the Senator from North Dakota (Mr. BURDICK), the Senator from Idaho (Mr. CHURCH), the Senators from California (Mr. CRANSTON and Mr. TUNNEY), the Senator from Arkansas (Mr. FULBRIGHT), the Senator from Oklahoma (Mr. HARRIS), the Senator from Oregon (Mr. HATFIELD), the Senator from Minnesota (Mr. HUMPHREY), the Senator from Hawaii (Mr. INOUYE), the Senator from New York (Mr. JAVITS), the Senator from Washington (Mr. MAGNUSON), the Senator from South Dakota (Mr. MCGOVERN), the Senator from Minnesota (Mr. MONDALE), and the Senator from Illinois (Mr. STEVENSON) were added as cosponsors of Senate Resolution 273, relating to extension of the nuclear test ban treaty to include underground testing.

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## FOREIGN RELATIONS AUTHORIZATION ACT—AMENDMENT

AMENDMENT NO. 1194

(Ordered to be printed and to lie on the table.)

Mr. HARTKE submitted an amendment intended to be proposed by him to the bill (S. 3526) to provide authorizations for certain agencies conducting the foreign relations of the United States, and for other purposes.

## ADDITIONAL COSPONSORS OF AMENDMENTS

AMENDMENTS NOS. 998 AND 999

Mr. CHURCH. Mr. President, I ask unanimous consent that the name of the Senator from Minnesota (Mr. MONDALE) be added as a cosponsor of amendments Nos. 998 and 999, which I intend to offer to the bill (H.R. 1) to amend the Social Security Act to increase benefits and improve eligibility and computation methods under the OASDI program, to make improvements in the medicare, medicaid, and maternal and child health programs with emphasis on improvements in their operating effectiveness, to replace the existing Federal-State public assistance programs with a Federal program of adult assistance and a Federal program of benefits to low-income families with children with incentives and requirements for employment and training to improve the capacity for employment of members of such families, and for other purposes.

The PRESIDING OFFICER. Without objection, it is so ordered.

Mr. CHURCH. The Senator from Minnesota (Mr. MONDALE) was one of the early supporters of these proposals, but his name has been mistakenly not listed in the official records as a cosponsor, even though I have indicated publicly his cosponsorship of the amendments.

AMENDMENT NO. 1176

At the request of Mr. BENTSEN (for Mr. DOMINICK), the Senator from Virginia (Mr. HARRY F. BYRD, JR.), the Senator from Utah (Mr. BENNETT), the Senator from New Hampshire (Mr. MCINTYRE), and the Senator from Nevada (Mr. CANNON) were added as cosponsors of amendment No. 1176, intended to be offered to the bill (S. 3526) to provide authorizations for certain agencies conducting the foreign relations of the United States, and for other purposes.

## NOTICE OF TIME CHANGE OF INVESTIGATIVE HEARINGS ON BARBITURATE ABUSE

Mr. ROBERT C. BYRD. Mr. President, on behalf of the distinguished Senator from Indiana (Mr. BAYH), I ask unanimous consent that a statement prepared by him be printed in the RECORD at this point.

The PRESIDING OFFICER. Without objection, it is so ordered.

STATEMENT BY SENATOR BAYH

I wish to announce that the Subcommittee to Investigate Juvenile Delinquency of the Committee on the Judiciary is continuing its investigative hearings on barbiturate abuse on May 17, 1972.

The Subcommittee began this investigation with hearings December 15 and 16, 1971 on the extent of barbiturate abuse and the legitimate uses of these dangerous drugs. On May 2 and 3, 1972 the Subcommittee heard testimony from police officials and others on the illegal diversion of legitimately produced barbiturate materials and pills; illicit barbiturate traffic; and law enforcement responses to the diversion and illegal distribution of these dangerous substances.

On May 17 we will hear testimony from several district attorneys representing various regions of the country. They will focus on aspects of illicit barbiturate traffic and prosecutorial efforts to deal with the barbiturate problem.

The hearings will begin at 9:30 a.m. on May 17 in Room 2228, New Senate Office Building. Any person who wishes to submit a statement for the record should notify Mathea Falco, Staff Director and Chief Counsel of the Subcommittee at 225-2951.

## POSTPONEMENT OF HEARING

Mr. MOSS. Mr. President, I announce for the information of the Senate that the hearing scheduled for May 12 on S. 2556 to establish a municipal mine demonstration plant has been postponed. A new date will be announced at a later date.

## NOTICE OF COMPREHENSIVE TEST BAN HEARINGS

Mr. MUSKIE. Mr. President, the Subcommittee on Arms Control, International Law, and Organization of the Committee on Foreign Relations will hold a hearing on Monday, May 15, 1972, on the need for a comprehensive nuclear test ban treaty, including consideration of Senate Resolution 230 introduced by Senator KENNEDY, and Senate Resolution 273 introduced by Senators HART and MATHIAS. The hearing will begin at 10 a.m., in room 4221 of the New Senate Office Building.

This hearing follows upon hearings held in the Arms Control Subcommittee last summer on prospects for a comprehensive nuclear test ban treaty. In those hearings we heard testimony from administration witnesses and from outside experts on the current status of negotiations for a comprehensive test ban and on the technical issues involved.

The United States is firmly committed by the Limited Test Ban Treaty of 1963 and the Non-Proliferation Treaty of 1968 to work for a comprehensive nuclear test ban. The President himself has said that—

The United States supports the conclusion of a comprehensive test ban adequately verified.

As last year's hearings demonstrated, the scientific techniques of detection and identification of underground nuclear tests have improved dramatically in recent years. This progress clears the way for a fresh start in negotiations leading toward a comprehensive test ban—negotiations which have been stymied in the past by the problem of verification.

The benefits of a comprehensive test ban treaty are clear: Such a treaty would control the arms race in new offensive and defensive nuclear weapons development. It would spare the world of environmental dangers of large underground tests. It could also salvage the Non-Proliferation Treaty of 1968, which seems increasingly in jeopardy, since the nuclear powers would for the first time impose the same testing constraints on themselves that the 1968 treaty does on the non-nuclear powers. And a comprehensive test ban would also save us the millions of dollars which are now expended annually on underground tests of dubious value to our national security.

For all these reasons, I urged the administration last year to take new and bold initiatives to breathe life into its own stated commitment to work for a comprehensive nuclear test ban treaty. In the intervening period little appears to have been done to move toward this goal. The resolutions introduced by my distinguished colleagues would provide an opportunity for the Senate to place itself on record in support of such initiatives. The timeliness of the issue, as we approach an initial SALT agreement, is clear.

The witnesses at the hearing on May 15 will include Senators KENNEDY, HART, and MATHIAS in behalf of their respective resolutions; the Honorable Philip J. Farley, Deputy Director of the Arms Control and Disarmament Agency; Dr. Herbert York, dean of graduate studies, University of California at San Diego; Prof. Lynn R. Sykes, Lamont-Doherty Geological Observatory; Dr. Adrian S. Fisher, dean of the Georgetown Law School; Prof. Abram Chayes, Harvard Law School; and Mrs. Jo Pomerance, cochairman of the Task Force for the Nuclear Test Ban.

## ADDITIONAL STATEMENTS

### DISGRACEFUL NONCOOPERATION

Mr. GOLDWATER. Mr. President, while driving home last evening I heard on my car radio a report that four Democrat Members of the House of Representatives had filed a resolution to impeach President Nixon on the constitutional grounds of "high crimes and misdemeanors."

It struck me, Mr. President, as a fitting move to top off the most disgraceful exercise in noncooperation I have ever seen performed by a major political party in a time of national emergency.

The resolution was only the most ridiculous of the steps taken or suggested by men who are playing politics right up to the hilt with the war in Vietnam and, consequently, with the lives of Americans and their allies in Southeast Asia.

On the House side, Democrats on the Committee on Foreign Affairs are pushing legislation to force the United States to pull all of its forces out of Indochina by October 1, subject only to the release of prisoners and the safe withdrawal of American troops. Here in the Senate, the Democratic Caucus voted 29 to 14 to condemn what it called an "escalation of the war" by President Nixon, and it approved by a vote of 35 to 8 a proposal to cut off all funds for U.S. forces in Vietnam after the first of the year.

If I sound a trifle cynical, Mr. President, it is because I am cynical. In fact, I am disgusted with the political roadblock which the Democrats in Congress are placing in the path of a Republican President who is trying to wind down and end their war. I actually am beginning to wonder if the Democrats want this war to end before the election.

The contrast between what Americans saw on their television sets on the evening of May 8 and what is now going on in the Halls and the Chambers of a Democrat-controlled Congress is down-

right amazing. When President Nixon told the American people that he was going to mine the harbors of North Vietnam and interdict supply routes to South Vietnam in an effort to protect the withdrawal of American troops and hasten the time when our POW's would be returned, he knew exactly what he was doing—he was placing the lives of 60,000 Americans, the future of South Vietnam, and the honor of this Nation ahead of his chances for reelection to the White House. He knew and he said that the easy way would be the way suggested by Democrats who want to cut and run and wash our hands completely of all affairs in Indochina, regardless of our commitments and treaties and agreements. He knew he was taking the difficult course. He knew that the men responsible for placing this Nation in the awkward position it finds itself in in Southeast Asia would accuse him of escalating and widening the war.

Right here, Mr. President, I want it understood that regardless of how many special articles appear in liberal and left wing publications under the title "Nixon's War"—despite all the propaganda aimed at making the American people believe the President has some basic responsibility for this conflict—I shall continue to call the difficulties in Vietnam the Democrat war. I do not like to say that, but I do not know any other way to describe a conflict which began under President John F. Kennedy and reached its high point of escalation under President Lyndon Johnson before a Republican Chief Executive could take hold and start pulling our chestnuts out of the fire.

If ever there was a political party that should, by everything that is right and moral, leap to the chance of helping a President wind down an unpopular war, it is the Democrat Party of the Kennedys, the Fulbrights, the Humphreys, and the Muskies.

Mr. President, I have something of a personal stake in the appeal I am now making for united support of the President of the United States. If you will permit me, I should like to pose for your consideration a few flashbacks in our thinking. We can call them flashbacks to crises, and we might describe them something as follows.

First. The time is late October 1962. All of a sudden a Democrat President who just 2 weeks before had been assuring this country that the Soviet Union was mellowing in its attitude toward the West placed this country on a collision course with the Soviet Union by announcing a blockade of Cuba to prevent the installation of long-range Soviet missiles on that island 90 miles from our shores. It is important to remember that we were just concluding an important congressional election in which feelings ran high between Republican and Democrat aspirants for public office. Nevertheless, when the President announced the gravity of the action he had taken and called upon the American people for support, Republican leaders, many of them candidates for public office, immediately sprang to his support without raising a single doubt. In California, where a hot race was being waged for Governor of that State, the Republican candidate went on statewide television hookup to pledge his support of President Kennedy in the missile crisis and to urge all Americans to do the same thing. His name was Richard M. Nixon, and he was defeated for the Governorship of California.

Flashback No. 2. The time was a bright afternoon in August in 1964. I had just won the Republican nomination for President and was taking a few days rest at Newport Beach, Calif. All of a sudden the telephone rang, and then came that always-electrifying statement:

This is the White House calling. The President would like to speak with Senator Barry Goldwater.

As I recall, I was still in my sailing togs, having just completed a trip to nearby Catalina in a neighbor's boat. I had heard of no great problem that would cause the President to contact me in that urgent fashion. However, when he came on, he told me that the Communists had attacked some American ships in the Gulf of Tonkin, that the war in Vietnam had taken a nasty turn, and he wanted to know if he could count on my support to take whatever actions he deemed necessary to meet the situation. I want Senators to understand that this was my President calling with an urgent request for patriotic cooperation. Without waiting a moment, I assured him of that cooperation and said I felt he was in a better position than anyone else to know how grave the conditions were and how they would affect America's strategic interests.

I believe this is enough reference to events of the past. I mention them for one very important reason, and this is that every time Democrat Presidents have faced war emergencies, the Republicans were the first to offer and give assistance. I can tell you now that I had some reservations about how serious the incidents were in the Gulf of Tonkin, but I had no hard facts to work with, and the President had. Consequently, L. B. J. made me something of an accomplice in the actions which he took later on with reference to the Gulf of Tonkin.

But the situation today is not the same. It is not the same because this is not a Republican President asking for help in a war his administration helped to build. The situation here is the spectacle of a Republican President asking for cooperation from men who put us in the mess we are in today and who helped compound the extent of that mess. Any way you slice it, there is no way it can be denied that the first fighting troops were sent to Vietnam by Democrat President John F. Kennedy, and the huge force of almost three-quarters of a million men was sent there by Democrat President Lyndon Johnson. And the only action ever taken in the past decade to reduce our involvement and withdraw our troops has been taken by President Richard Nixon.

Now Mr. Nixon has decided to mine the harbor of Haiphong to facilitate the rate of American withdrawal from Vietnam and to ease the pressure on the South Vietnamese people. Contrary to the reports we hear on the media and read in the newspapers, the mining of Haiphong was a passive act. It was an action taken to save lives by preventing the easy movement of weapons of destruction to the bloodthirsty troops of the Hanoi government. This cannot be called escalation by any stretch of the imagination. It can be called escalation only by the wierd, untruthful insistence of the liberals and the Democrats who insist that any actions President Nixon takes short of outright surrender qualify as escalation.

What I want to know today is, Where were all my friends on the Democratic side when true escalation was actually taking place? Why was there not a resolution to impeach Johnson floating around as he kept building up the American troop forces and casualty rate week after week? Where was my friend the majority leader (Mr. MANSFIELD) at that time? He is now very quick to charge Nixon with a risky gamble and enlargement of the war while the reverse is actually the case.

And then there is HUBERT HUMPHREY, my friend from Minnesota, who is running hard for the Democratic presidential nomination. HUBERT says he cannot support President Nixon because the course of action he has taken is filled with danger. Where was HUBERT when the danger was really on the increase, when L. B. J. was sending men and machines to Vietnam as fast as the ships could take them there? Why was that not dangerous?

And, of course, when it really counted, that great war critic, Chairman FULBRIGHT, of the Senate Foreign Relations Committee, was busy sponsoring, arguing for, and pushing through to adoption the Gulf of Tonkin resolution, which gave senatorial blessing to escalation of the war a la Democrat President Johnson.

Mr. President, I do not quite know what to think about my friends on the other side of the aisle when I hear about resolutions to impeach President Nixon for trying to end a war the Democrats started. I begin to wonder if our friends on the other side of the aisle have received another letter of direction from Mrs. Nguyen Binh, the chief Vietcong negotiator at the Paris peace talks. I do not have to point out that, when Mrs. Binh wrote her last letter urging Members of Congress to repudiate President Nixon, the Democrats on the House side went into caucus and approved overwhelmingly an end-the-war resolution of their own. At the same time, Democrat leaders in the Senate objected to the consideration of my resolution to condemn the invasion of South Vietnam by the Communists and to put the Senate on record in support of the U.S. Government.

Mr. President, I get an uncomfortable feeling when I hear about Mrs. Binh sending orders to the U.S. Congress or when I read in the Wall Street Journal about an Ad Hoc Military Buildup Committee in Cambridge, Mass., which has been formed for the sole purpose of gathering classified military data from disgruntled soldiers and making it public.

And I get the same kind of unhappy feeling when I read about American

radicals visiting the Soviet Embassy in Washington to urge the Russians to increase their support of the Communist enemy in Vietnam. Some of them carried signs which said:

Send more missiles to shoot down U.S. planes.

I suggest, Mr. President, that we can expect nothing more from radicals on the street when radicals in Congress run around downgrading the United States of America in everything it attempts to do. We in this Chamber have a higher responsibility than that to partisanship or political party. We have a responsibility to the United States of America and to its under-205-million citizens.

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## WHERE HAVE ALL THE FARMERS GONE?

Mr. TALMADGE. Mr. President, last year, during field hearings of our Subcommittee on Rural Development, Harold Ruden, an Iowa farm auctioneer, told us that in western Iowa it was inefficient to farm fewer than 450 acres. He told of how he was showing farmers with less land than that how they could sell their farms, invest the money, and get a better return than they could by working in the fields.

Today, the Wall Street Journal tells the story of Paul Bates, of Bloomington, Ill., who farmed more than 650 acres, but decided that he had better sell out while he could.

The trend toward bigness in agriculture continues. We now have fewer than 3 million farmers. There has been a lot of gnashing of teeth and beating of breasts in Congress and elsewhere over the plight of the yeoman farmers. But it has been my experience that few people care enough to do something about their problems.

Mr. President, it is well known that I am an advocate of rural development, but there can be no meaningful rural development until we begin to take seriously the preservation of the family farm.

Mr. President, I ask unanimous consent that the article about Mr. Bates be printed in the RECORD.

There being no objection, the article was ordered to be printed in the RECORD, as follows:

AUCTION IN A CORN FIELD ENDS THE FARMING LIFE FOR AN ILLINOIS FAMILY

(By John A. Presto)

BLOOMINGTON, ILL.—In a bleak corn field north of town, farmers in overalls and muddy boots crowd around a red pickup truck. Near the truck sits a piece of farm equipment. From the back of the truck comes an auctioneer's flurry of words: "I'm-a-bid 450, do I hear 475? Now I got 75, you're gonna buy it at 500 . . . all done, gonna quit, last chance . . . sold for $500."

The crowd follows the truck as it rolls slowly over the corn field's deep ruts to the next piece of equipment. "Now, here, boys, is a real nice piece of machinery. . . ."

Behind the auctioneer sits Paul Bates, 42, who has farmed this land all his adult life. He watches intently as all his tractors, trucks, and tools go one by one to the highest bidder. Finally, with the last pound of the auctioneer's fist, he is a farmer no more.

"I'd always figured somebody would take care of this after I was dead," he says quietly. "I never thought I'd ever leave the land and have to see them sell off the things I've used for, well, it seems like all my life." This is the first spring in 100 years that a Bates isn't planting this land.

Auctions like this across the country play a key role in the move from farm to city, a move that still changes the lives of many Americans every year. The United States now is losing 123 farms a day, down from the pace of a few years back but still high. Only 2.83 million farms will operate this year, down nearly a million from 3.7 million a decade ago. Some farmers retire. Some, like Paul Bates, find better jobs in town. Others just go broke. Whatever the reason, the auction is usually the means by which they leave the farm.

BARGAINS AND TAX BREAKS

Other farmers are willing buyers of the machinery, livestock, furniture and sometimes even acreage itself that is sold at such auctions. Prices are often lower than on other markets. Besides, most states don't charge sales tax on such auctions. Thus an estimated $300 million worth of machinery and equipment alone changes hands at farm auctions each year.

But for all its bargains, the farm auction, like the small family farm itself, is a fading piece of Americana. The number of auctions peaked during the Depression when bankers often held them as part of foreclosure proceedings. Sympathetic neighbors often agreed to bid only a tiny amount on each item, then give all the goods back to the farmer being squeezed.

The number of auctions now is dwindling mainly because there are simply fewer and fewer small family farms left to be sold. In the area around this town, 279 auctions have been held in the last year, down about 30% from the level three years earlier, says Stanley Lantz, farm editor of the Bloomington Daily Pantagraph. "Maybe within this decade, we'll see farm auctions become a thing of the past," he says.

Auctions are important social and business events in a farm community—and emotional events for people like Paul Bates. His situation is common on American farms. "I'm a little bitter about quitting farming," he concedes the night before the auction. "The circumstances aren't entirely of my own making, but my better judgment tells me I'd best get out now. I know it's no use to get emotional about something like this—but, God, I wish I didn't have to be there tomorrow."

FARMING ON WEEKENDS

To supplement his farm income, Paul last year took a job as a commodity futures broker with the Illinois Agricultural Association, a trade group that merchandises grain, among other activities. Paul already had some experience in grain trading, and he had worked part-time in winters on farmers' books. But even with the new job, he continued farming. Though he quit the hog-fattening business, he found he could manage his own 270 acres plus about 400 rented acres by working nights and weekends raising the corn.

Paul planned to do the same this year, but last Jan. 7 a fire destroyed his barn, biggest tractor, biggest truck and considerable machinery.

"We were insured, but we got only $6,500 on the tractor, and it would cost about $13,000 to replace it," Paul says. "So it came down to whether we wanted to invest about $30,000 to keep going or pull out. Considering that we made only about 3% on our investment last year, and that my salary is bigger than the cash I made by farming, pulling out looks like the sensible answer."

Paul, who is divorced, will still live in the wood frame farmhouse with his 17-year-old daughter. His 65-year-old father and farm partner, Tom Bates, will also continue to live in a separate house on the farm. Since heart trouble laid him up for five months three year ago, Thomas Bates has steadily reduced his farm work. He clearly is anxious to quit farming altogether and relax in his sedate job as a watchman at a nearby orphanage. Unlike his son, he is tired of the farm's responsibility. The Bates' have already rented their land to a neighbor in return for half the crop.

The afternoon before the auction, Paul sits at his kitchen table wtih the auctioneers who come to size up the goods they are supposed to sell. The auctioneers, Kenneth Coulter and Dean Yoder, are professionals at the work, though they also keep a hand in real estate and farming. In their appearance, they are a combination of farmer and mod city slicker. Mr. Coulter wears a bright green sports coat, pink shirt and pink tie—along with cowboy boots and Western hat.

The two auctioneers breeze into the kitchen, laugh loudly at their own jokes and slap Paul on the back. "I guess that's their bedside manner when they see a guy like me feeling a little down," Paul says later, with appreciation.

The auctioneers discuss prices and warn Paul he is in for some disappointments. "The prices you'll get for some things will be so low your feelings will be hurt, but other items will bring a lot more than you figured," Ken advises.

Auction day itself is sunny, but chilly. Three hours before the 11 a.m. starting time, farmers begin arriving to inspect the goods. They poke and pry. They drive the tractors. They ask questions:

"How long you had the planter, Paul?" "Do the gas pumps work?" "How could I hook up that John Deere mower to my International (Harvester) tractor?" Paul and his father patiently answer each one.

The two auctioneers arrive in their red truck and begin to register bidders. Each of the 216 registrants receives a number to flash at the clerk if he buys something. "It speeds things up quite a bit to use numbers instead of names when we sell," Mr. Coulter explains. "We know a lot of these men personally, but if we see a stranger buying up a lot of things, one of us will slip into the house and make a telephone credit check wtih the guy's local bank while the auction is still going on," he adds.

TRICKS OF THE TRADE

In the dealing itself, a country auction demands its own brand of shrewd sophistication. "The real skill of an auctioneer is to figure out just how far the bidders will go and then make sure they get to that point," Mr. Coulter says. The purpose of the auctioneer's fast patter is to build excitement and a semblance of momentum, even though the bidders themselves may actually be pausing to think things over. A dishonorable—but widely used—auctioner's trick is to throw in a few fictitious bids to prod the actual bidders to higher and higher levels.

Some items are even sold fictitiously. The seller usually gets his own bidding number, which he keeps secret. Thus he can "buy" slow movers that are dampening the crowd's enthusiasm or items that aren't bringing high enough bids. For instance, Paul keeps number 44, sits in the truck with the auctioneers and discreetly taps one of them on the shoulder when an old wooden picnic table attracts a top bid of only 50 cents. Paul "buys" it for 75 cents.

The auctioneers' skill apparently helps boost prices on several items. A hay mower that Paul bought second-hand for $75 eight years ago brings $90 in spirited bidding. A 1960 Chevrolet truck that Paul figures is worth about $1,000 sells for $1,600. On the other hand, an old planter sells for $700 instead of the $1,000 Paul expected. Another piece of equipment that might command over $700 in a used machinery store goes for only $370.

WEARING OUT THE COMPETITION

One reason for these low prices, of course, is that buyers have tricks, too. For instance, one savvy farmer who frequents many auctions deliberately tries to slow down the pace. If the auctioneer wants to open bidding on a tool for, say, $5, this farmer may bid 75 cents. He raises his bid only 25 cents a time and eventually wears out his competitors.

"This guy knows a lot of people will bid just so many times on something and then quit, even if the price is way too low," says Mr. Coulter with grudging respect. "I've seen him pick up a lot of power tools and stuff for chickenfeed."

An elderly farmer with a cane uses another hoary trick. Long before Paul's auction starts, he hangs around a small tractor. When other farmers stop to look at it, he sidles up and shakes his head. "Needs new brakes," he says knowingly to one man. "Not in such good shape," he murmurs to another. But when the bidding gets around to this tractor, the elderly man bids vigorously against all comers. He smiles broadly when he is declared the buyer.

After four hours of selling, the auction reaches its finale: bidding for the big combine. On such big-ticket items, the auctioneers openly beg and cajole. "Come on, fellas, you know darn well you'd pay twice as much to a dealer for a machine in this good a shape," Mr. Yoder pleads. "Paul will never speak to me if you don't give me at least three-quarters of what it's worth." Paul had hoped to get $7,000 or $8,000 for the five-year-old piece of equipment. The auctioneers considered $6,500 more likely and $7,000 the absolute top. The combine goes for $6,900.

SETTLING UP IN THE KITCHEN

The farmers quickly take charge of their purchases and settle their bills. Payment is by cash or check. Bills are settled in the kitchen where the auctioneers' wives have set up shop with two adding machines and a cash box.

Within half an hour, nearly everybody is gone, and the auctioneers' wives total the proceeds. The auction brings in nearly $26,000, which Mr. Coulter says is a little more than average. It's about what Paul had hoped to get. The auctioneers collect their 2% fee; the clerks and cashiers share 1%.

With a cheery beep-beep on the horn, the auctioneers speed away. It is over. Paul Bates is an ex-farmer, yet another country gentleman who lives in a farmhouse but works in a town. He knows things will never be the same.

"Farming is a great way of life—until it stops being a way of life," Paul muses. "I've worked so hard at it that I never learned to swim or dance or play golf or any of the things that other people do to enjoy themselves. I always thought, well, I have my farm. But now I have nothing, except my job. It's a very lonely feeling."

## MISREPRESENTATIONS OF SENATOR SMITH'S ACTIONS ON CROPLAND CONVERSION PROGRAM

Mrs. SMITH. Mr. President, within the past few weeks, the Representative from the Second Congressional District of Maine has twice made misrepresentations against me on my efforts to fund $10 million for the cropland conversion program, which is a land retirement program.

On April 20, 1972, he represented that "no action had been taken and none is planned." To the contrary, action had been taken more than a month prior to that when on March 14, 1972, I offered my proposal as an amendment to the urgency supplemental appropriations bill when it was before the Senate Appropriations Committee. The committee took unfavorable action in turning it down then but agreed to consider my proposal favorably as an amendment to the second supplemental appropriations bill when it came before the committee.

Then when the second supplemental appropriations bill came before the Senate committee, the members kept their word with me and adopted my proposal as an amendment to that bill, as did the full Senate in passing and sending the bill to conference with the House.

Yesterday the press reported a statement by Representative HATHAWAY as representing that my proposal for the funds would cover only the rest of this fiscal year 1972, which expires on June 30. Again Representative HATHAWAY has made a serious misrepresentation against me on my proposal, for there is no time limit on my proposal, and the funds would not be cut off after June 30. To the contrary, my proposal as adopted by the Senate very specificially states that the $10 million would "remain available until expended," thus removing any time limit on the proposed funds.

I prefer to believe that Representative HATHAWAY did not deliberately make this misrepresentation against me but rather was misled by faulty staff work that failed to read the language of my amendment as adopted by the Senate. The language is clear enough, and the Senate-amended version of the bill has been in print and available for 2 weeks.

I do wish that Representative HATHAWAY would be more careful in the future about making misrepresentations against me, whether deliberate or as a result of faulty staff work.

## AIRPORT SALE

Mr. SPONG. Mr. President, the Office of Management and Budget recently announced that it will seek legislation to authorize the sale of National and Dulles airports to the "highest bidder," which almost surely would be a private interest or some consortium of interests. I would vigorously oppose such a sale for reasons which I explained in a speech before the Virginia State Chamber of Commerce convention. I ask unanimous consent that excerpts from that speech be printed in the RECORD.

There being no objection, the remarks were ordered to be printed in the RECORD, as follows:

REMARKS BY SENATOR WILLIAM B. SPONG, JR.

I want to talk wi'h you today about two issues before the Congress which are of special importance to Virginians.

The first of these is the future of National and Dulles airports.

As many of you know, the Office of Management and Budget has let it be known it now wants to sell the airports to the highest bidder. Almost certainly that would be a private interest or consortium of interests.

In my judgment, the proposal is a preposterous scheme, a *non sequitur* in the long debate over these airports. It bears no relationship to any of the issues which have been raised, it is inconsistent with past statements of the FAA and Department of Transportation and even contradicts the Administration's own budget statement that the primary goal of the sale is to encourage more efficient utilization of the airports and a better allocation of traffic.

Washington National and Dulles International airports are the only Federally owned and operated airports in the country. They are also the only airports that are not in some way responsible to the community of which they are a part.

Thirty years ago, when the Federal government first got into the airport business, this was not a major concern. Washington was a smaller community, less densely developed, and less affected by the limited operations at National Airport.

Since then, however, there have been dramatic changes both in the development of the region and the growth of its air traffic. No longer are the airports something off to themselves. In their impact on the environment, their burden upon local ground facilities, their contribution to the area's economy, their performance of vital transportation services, and in a dozen other ways, the airports today are an integral part of the urban complex they serve.

It is an anachronism that planning and development of these facilities should continue to take place in a vacuum without reference to other community plans or desires. The interests of the airlines have long been represented in the decisions of the FAA. It is time that there was as much concern with the interests of those who must live with the consequences of those decisions. In my opinion, that should be the principal objective of any transfer to a new owner.

A second purpose should be to assure that the airports are developed on an orderly, systematic basis.

The Washington area is fortunate in being served by three major airports. It is probably the only urban center in the country today with such a surplus of airport capacity. Yet, at the same time, it suffers from airport congestion as severe as any I know.

There is a simple explanation for this paradox. The development of the airports in this area has simply been left to the forces of the marketplace. And, in that situation, the airlines have continued to expand their profitable use of National to the point where that facility now handles about 65% of all passengers in the region.

With stretch jets now operating at National and the prospect that they will soon be followed by even larger wide-bodied jumbo jets, there is no practical limit on expansion of business at that facility. Neither the 40-per hour limit nor the ban on the use of 4-engine jets would have any limiting effect at all.

As you know, the CAB regards Washington and Baltimore as a single, hyphenated point for purposes of certificating air carrier service. Unfortunately, that is as far as a regional concept has advanced. Once certificated, airlines generally have discretion to use any of the three airports they wish. There is no long range plan or program for the balanced development of the facilities nor for coordination with other community developments.

For many years, I have been fighting what sometimes seems a lonely battle to bring about this kind of regional planning. I believe it is essential and I have been pleased to have the support of General E. R. Quesada, former head of the FAA and director of American Airlines. Testifying before the Senate D.C. Committee three years ago, General Quesada made two extremely important points:

First:

". . . the fact remains that one should not expect and certainly should not hope for the solution to National's problems to be reached by agreement among the airlines.

The competitive instincts are such that this is not a hopeful solution."

And second:

"Washington's problem, in my opinion, cannot be resolved until someone has the courage to consider the requirement as a whole and use their courage to apply a reasonable standard to the use of each (airport). Until that is accomplished, I do not see a constructive and progressive solution to our problem."

With General Quesada, I believe that National Airport has a role in meeting the area's air transportation needs in the short-haul field. Better planning and development, however, should restrict that role and result in a more reasonable scheduling of flights at Dulles and Friendship.

I know that there have been discussed many possibilities for providing new ownership and management of the airports and there are some differences of view. But I believe all parties until now have agreed on the need to give some voice in these matters to the residents of the area and to bring about a more rational use of our resources.

The OMB plan to sell the facilities at auction to the highest bidder would do nothing to meet these problems. On the contrary, it would probably aggravate them.

I would vigorously oppose any legislation to authorize such a sale. I plan to ask the chairman of the Senate Aviation Subcommittee to reopen the hearings suspended a year ago when the FAA asked for more time to take a position on this sale. Clearly, OMB has given it a position now and the Committee should go on with its consideration of a constructive solution to the problem.

## LETTER FROM A VIETNAM WAR VETERAN

Mr. TOWER. Mr. President, there has been a great deal said in this body lately about the situation in Vietnam. I believe that most of it has been said sincerely and in what the speaker believed was the best interest of the Nation. Try as we may, however, oftentimes we are not so eloquent as are many of our constituents when they write to us.

Recently, I received a letter from a constituent that is a case in point. I invite all Senators to read the letter. It is an eloquent testimony from one who has spent a good deal of time in Vietnam to what we are trying to do there. I ask unanimous consent that the letter be printed in the RECORD.

There being no objection, the letter was ordered to be printed in the RECORD, as follows:

Hon. JOHN G. TOWER,
*U.S. Senate,*
*Washington, D.C.*

DEAR SENATOR TOWER: This is the first time that I have written to any member of the Congress, although my father was a member of that body in representing the people of Texas for three terms in the House.

I am a career officer in the Marine Corps. I accept and support the fact that while I may not always agree with the policies of my government, that those policies are forged in consideration of my views and those of all other Americans, and contribute to the formation of our leaders' best judgment as to what constitutes appropriate goals for our country, at home and abroad. I believe that our leaders have succeeded well in defining these goals particularly in the realm of foreign policy, to the extent that they have engaged us in pursuits designed to help other less fortunate nations to achieve the freedom that was so hard won by our forefathers, but so easily taken for granted today. One such pursuit led to our involvement in the Vietnam war. I commanded the artillery battery in the first landing of U.S. forces in Vietnam on March 8, 1965. For me, the mission was clear—to assist the Vietnamese people to achieve the necessary security within which they could form a government and get on with the process of building their economy and providing for their people. In retrospect, I recognize as illusions and examples of ignorance some conventional elements in our approach to what was clearly not a conventional political military problem. I believe, however, that over time, our perception of the nature of victory has developed and an appreciation of past errors has led to a maturing of our tactics and a shifting of resources into the building of a viable basis for nationhood in South Vietnam.

Unfortunately, however, the public has been led to focus on our earlier errors and misconceptions, and to believe that our efforts remain mired in pursuing a purely military solution. This public preoccupation with condemning the errors of the past has further resulted in a willingness to label the entire effort as wrong and unsalvageable. Americans no longer concern themselves with our original end, but with the earlier means to that end, and therein lies the compromise to any public appreciation of the very humanistic goal we have been and remain dedicated to achieving. "To establish security behind which the Vietnamese can go about building a free society." That was and is our goal in Vietnam.

Each day we read a great deal of the combat, the loss of life and destruction. Unfortunately, we hear very little of the lasting efforts which receive equal emphasis—the building of schools, roads, hospitals and economic infrastructure. It is these efforts which reflect the good faith of Americans in pursuing the goal of freedom in Vietnam; of being willing to admit errors of the past; of shifting priorities to nonmilitary efforts; but of never breaking faith, with our commitment to make possible for the Vietnamese what we in America hold so dear.

Today the public is again being persuaded to forget the goal and commitment and to consider the costs. Many of our elected representatives point to the loss of life and conclude that this eternal fact of war, makes its pursuit not worthwhile. Quite frankly, I can only ask how less dear to us today was the death of a French soldier at Yorktown in fighting for American independence than the death of an American in Vietnam? I believe the answers of President Washington and Senator Kennedy might differ in this regard! A sense of purpose—a belief in freedom is what has guided our men in the armed forces through seven years of combat. We have not been perfect. We have made serious mistakes. Through it all, however, we have retained our original sense of purpose, our belief in freedom for the Vietnamese, and our integrity toward our commitment to them.

For seven years we have preached the virtues of self determination, perhaps someday of democracy. Our word has been accepted, and at our behest over a million South Vietnamese young men have taken up the challenge and hundreds of thousands have paid with their lives. Senator, a man does not place his life in peril without feeling that the challenge is worth his greatest sacrifice. Man just isn't made that way. Vietnamese have died because they believed in our idea of freedom. What is to become of the ideal of freedom if America states that it no longer believes in it for the Vietnamese. Indeed, what is left for Americans to believe in if we reject the cause of freedom for our fellow man.

By nature I am not a believer in crusades without consideration of the alternatives. After a consideration of history and of the tragic folly that has occasionally destroyed man figuratively and literally, as well as his sense of human worth. I have been extremely demanding upon those who allege the necessity for war for any purpose. In this context, however, I believe freedom and self determination to be inalienable rights for all mankind and I will give my best efforts to their survival.

I hope that in the closing days of this war that we will not let the length of the battle divert us from the legitimacy of our purpose. For if that sense of purposes dies, I fear for America and will ask God's forgiveness for those who will have died in vain.

Very Respectfully,

———— ————.

## TRIBUTE TO A PATRIOT

Mr. CANNON. Mr. President, many words of praise have been spoken in the memory of that great American patriot, J. Edgar Hoover. They are all well deserved for a man who, by talent, energy, and sheer genius of will created a law enforcement agency recognized and respected throughout the world for its integrity and efficiency.

The American people owe an unusual debt of gratitude to Mr. Hoover. As head of the Federal Bureau of Investigation for 48 years, J. Edgar Hoover molded an institution which has become a bastion in the Nation's fight against crime, communism, and other forms of subversion; as well as a leader in upgrading law enforcement procedures in this country.

Under his guidance the FBI developed a force of dedicated and qualified men and women, adopting the latest technological and scientific developments in the war against crime. Yet, ever cognizant of the dangers of concentrated power, he consistently opposed every effort to make the Bureau a national police force, and insisted that agents meticulously observe the rights of the criminals apprehended.

J. Edgar Hoover effectively carried out his duties under eight Presidents and 16 Attorneys General. It is my hope that the FBI will continue in this fine tradition which is the legacy left to us by that great American.

## NELSON B. LASSON

Mr. MATHIAS. Mr. President, the city of Baltimore and State of Maryland were saddened yesterday by the news of the loss of a distinguished citizen. I share that loss and that sadness. Nelson B. Lasson, journalist, educator and lawyer, died Tuesday morning at his home. He was 63.

Mr. Lasson was acknowledged to be an expert on the fourth amendment to the U.S. Constitution. His book entitled History and Development of the Fourth Amendment to the United States Constitution was published in 1937 and is still used as a reference work.

Mr. President, I ask unanimous consent that an account of Mr. Lasson's death published in the Baltimore Sun May 10 be printed in the RECORD.

There being no objection, the article was ordered to be printed in the RECORD, as folows:

NELSON B. LASSON, LAWYER, DIES AT 63

Nelson B. Lasson, a constitutional lawyer and lecturer and co-owner of an East Baltimore newspaper, died yesterday morning of a heart attack at his home, 6110 Biltmore avenue.

His career spanned the government, the university, the community and Jewish religious organizations. He was 63.

At the end of the war, in 1945, he became director of the War Records Division of the Maryland Historical Society. In 1946, however, he and a colleague went into the publishing and printing business. They bought Boone Press, Inc., and Guide Publications, Inc.

Three years ago he returned to teaching, becoming an associate professor of political science at Loyola College. He taught constitutional and civil liberties law. This past semester he also lectured at the University of Baltimore Law School.

FOURTH AMENDMENT EXPERT

He was acknowledged to be an expert on the Fourth Amendment to the United States Constitution, which deals with search and seizure. His book, "History and Development of the Fourth Amendment to the United States Constitution," although published in 1937 is still considered a reference work on the subject. He tried several constitutional cases in Maryland courts in the last several years.

Born in Baltimore, he graduated from City College in 1923 and four years later from the Johns Hopkins University. He then went to the University of Maryland Law School and graduated in 1931. Mr. Lasson decided he wanted to do more work in political science and went back to the Hopkins, receiving a doctorate in that field in 1934.

While doing graduate work at the Hopkins, he was named a Warren B. Hunting Scholar. He was also elected to Phi Beta Kappa and the Order of the Coif, the honorary law society.

He served in the past as a member of the board of Ner Israel Rabbinical College, Talmudical Academy and Shearith Israel Congregation.

Funeral services will be held at noon today at the Sol Levenson funeral establishment, 6010 Reisterstown road.

Survivors include his wife, the former Nanette Macht; three sons, Morris S. Lasson, of Baltimore, Kenneth L. Lasson, an author and lecturer at Goucher College, and Robert P. Lasson, of Geneva; a daughter, Mrs. Eleanor Berkowitz, of Cedarhurst, N.Y.; a brother, H. Milton Lasson, of Baltimore, and seven grandchildren.

## BIAFRA: A CASE FOR THE GENOCIDE CONVENTION

Mr. PROXMIRE. Mr. President, the Senate is well aware that the Genocide Convention treaty has been before it for more than 20 years. For those two decades this Chamber has refused to ratify that document despite the continuation of violence throughout the world.

Probably the worst example of genocide in recent years took place in the country of Nigeria. As a result of tribal rivalries and persecutions, civil war broke out in that African nation, and before it was brought to its bloody conclusion millions had perished. Only through international intervention and support were the Biafrans saved from extinction.

This was certainly a case for action under the articles of the Genocide Convention. Yet, nothing was done. Although protestations were made at the United Nations, and although concerned and humanitarian individuals the world over worked diligently for a cessation of violence, official action through the treaty was not initiated. The acts of genocide were left unchecked and unpunished.

One important explanation for the impotency of the treaty has been the unwillingness of the U.S. Government to stand behind it. Like the ill-fated League of Nations, present peace-keeping efforts are doomed to failure without our support. If crimes of genocide are ever to be prevented or punished, the United States will have to share in the responsibility.

Therefore I urge Senators to join me in swift consideration and ratification of the Genocide Convention. Let the horrors of Biafra never be repeated.

## ADDRESS BY HON. ROBERT T. MURPHY BEFORE SPRING QUARTERLY REGIONAL MEETING, ASSOCIATION OF LOCAL TRANSPORT AIRLINES

Mr. CANNON. Mr. President, last week the Association of Local Transport Airlines held its spring quarterly regional meeting in Atlanta, Ga. Atlanta is a very important crossroad in the transportation industry, so the meeting was well attended.

The principal address was given by Robert T. Murphy, a member of the Civil Aeronautics Board. He was optimistic for the air carrier industry as a whole, and for our local transport carriers. It is a statement well worth reading. I ask unanimous consent that it be printed in the RECORD.

There being no objection, the address was ordered to be printed in the RECORD, as follows:

ADDRESS BY THE HONORABLE ROBERT T. MURPHY

Once again, it is my great pleasure to participate in a Quarterly Meeting of ALTA. This year it is particularly enjoyable for me because it affords me the occasion to renew my acquaintance with Atlanta, the home base of Southern Airways and a most significant air transportation gateway for so much of this entire region. Atlanta's growth and prosperity are a never-ending source of awe and admiration to me. Each time that I have come here I have received the same impression—that Atlanta and its environs are burgeoning, but that the charm and character which has made it famous are still retained. The airlines, both trunk and regional carriers, have not only shared in this growth but also have been responsible in large measure for much of it. This is particularly true of our host carrier, Southern Airways, which is so closely identified with Atlanta and the entire State of Georgia. Piedmont, too, has made a substantial contribution and, to some extent, this is evidenced in the growth experienced jointly by Southern and Piedmont during the past five years which, in terms of revenue passenger-miles has amounted to 127%. So, while Atlanta is many things to many people, to us in civil aviation it is a significant transportation hub with routes radiating to large and small communities in the Southeast servicing a never-ending flow of passengers and cargo which have helped to stimulate the economy of this Capital City.

It is always a great pleasure to meet with carrier representatives at a time like this when traffic is on the upswing. The latest figures I have seen are very heartening indeed. The more than five point increase in local service load factors in March of 1972, compared to March 1971, was one of the most impressive spurts that I have seen since I came to the Board. From a 42.4 percent load factor in March 1971, your group escalated to 47.7 percent in March 1972. It was encouraging, indeed, for example, to see Frontier's load factor in March go up eight points above the previous March and to see Allegheny and Ozark go up six and Piedmont and Texas International go up more than five points. While in some cases this resulted from reduction in seat-miles, most of it was attributable to additional revenue passenger-miles. I have strong hopes that much of this traffic improvement will find its way down to the bottom line of your financial statements and that 1972 will be a far better year than the two bleak years we have just endured.

There are a number of relevant items which we could examine with interest at this quarterly conference and it is difficult to focus on some and ignore the others—topics such as service to small communities, the route strengthening program, aircraft loan guarantees, mutual aid, Visit U.S.A., advertising trade agreements, etc., are all worthy of some comment and treatment in the course of a discussion with you. However, it requires very little perception on my part to know that the most important subject which pervades your minds at this moment is Class Rate VI and the fiscal level for 1972. We at the Board regret that we have not yet been able to finalize the rate and we can appreciate your concerns. My own general attitude on subsidy payments for the rendition of local service is well-known and has often been stated. I see no reason to belabor the point at this time except to say that the economy and well-being of this country demands and warrants the continuation of subsidy support at a level consonant with our duty to maintain an efficient and adequate air transportation system to our small communities. I have always believed and I am still of the opinion that Federal support of local service air transportation is one of the wisest and most justifiable of all Federal support programs. Its positive benefits, both tangible and intangible, distinguish it in a host of respects from other so-called Federal subs'dy programs. And its comparativly modest proportions set it apart as a reasonable and prudent investment in the present and future welfare of this country.

In recent testimony on this subject before the Aviation Subcommittee of the Senate Commerce Committee our Chairman, Secor D. Browne, pointed out that we are bending every effort to expedite our internal processes and to set a fair and just rate. But this has been a difficult task in which the predictive process has seemed to be more elusive than usual because of the economic factors governing the forecast period as modified by more recent and current trends. While there have been increases in costs these have been difficult to allocate and, on the other side of the ledger, there has been a very substantial fare increase in effect for the full term of the past year which has resulted in improved yields and increased revenues. In the meantime, traffic and load factor improvements have been such as to gladden the hearts of all of us. The combination of these circumstances has made it difficult for the Board to complete the task as quickly as you would have wished.

A word on your role as local service carriers—Atlanta, as a gateway point in the Southeast is typical of the large hub served by the local carriers. From such hubs, routes radiate to the smaller communities. The maintenance of this service, as you know, is of vital concern to the Board and to the Con-

gress. It is a service which, while perhaps not as profitable or glamorous as an interregional operation, nonetheless, is the very reason for the creation and existence of the local service carrier industry as well as for the subsidy program itself. It is appropriate for me to urge you, as local service carriers, not to lose sight of this fundamental fact. To abandon this tradition—to denigrate this service—is to challenge the very purpose of your corporate existence. The transportation network which spans the country, reaching into smaller cities and connecting them with their important markets is the bloodstream of America's economic, social and cultural life. Every form of transport plays a part in this system. But air transportation offers that important element—speed—and the local service carriers bring that element to the small cities. With it they bring Hometown U.S.A. into the mainstream of U.S. life. I believe the Hometown citizen has come to rely on you. The speed and convenience you provide contribute to the quality of his life and to that extent help to alleviate the further concentration of population in the already overcrowded metropolis. It behooves all of us to remember, therefore, that air service to small communities is as important today as it was 10 years ago and 20 years ago.

When it comes to serving small cities, my own view has been expressed nowhere more clearly than in a statement of Secor Browne last year when he said:

"The ability to transport people and products by air is an important national asset. It should not be denied citizens who live outside the great metropolitan areas for whatever reason: logistical, legal or economic. It behooves all of us charged with responsibility for air commerce to see that every effort is made to preserve the totality of the system—that no point or service leg goes by the boards as a matter of default."

Now, the fact that we feel so strongly about the importance of service to small points does not mean that the Board will be completely inflexible on the question of service by the local carriers. As the economic health of the entire domestic airline industry improves it is not unreasonable to believe that additional limited steps will be taken to strengthen local routes. In 1966 your organization, ALTA, filed a most impressive and memorable study and report with the Board entitled, "Jet Age Route Policy for Local Service Airlines." A principal thrust of that report was that route strengthening offered the greatest potential for reducing subsidy while maintaining reasonable service to smaller cities. After due consideration, the Board embarked on such a program. A streamlined procedure was adopted to minimize red tape and by June 1969 more than 100 route modifications were made by the Board. These route strengthening actions and the concurrent reequipment program undertaken by the carriers produced some dramatic changes in the local carrier characteristics. For example, in 1963 the average stage length was 90 miles while in 1971 it was 158 miles. The average passenger load of 15 in 1963 more than doubled and total available ton-miles increased from 441 million to 2.2 billion (nearly five times), reflecting the capacity of the new jets. Despite charges from some quarters that you have been endeavoring to become junior trunklines, the locals are a long way from a 576 mile trunkline average hop or an average trunkline passenger trip of 761 miles.

As we know, the route strengthening program has not been a complete success in every instance to date. However, one of the earliest achievements of the Board's route strengthening program occurred in connection with the award of a New York City segment to Southern Airways. Here, within a year of introduction of service, the new route was producing 25% of Southern's entire system's revenue passenger-miles.

In fairness, the route strengthening program should be evaluated against the background of the economic turndown of the past few years and the resulting inflation, higher interest rates and greater costs generally. Moreover, on hindsight, I believe that we at the Board and you in the industry were too quick to reduce subsidy after 1966 considering the commitments required for new equipment, the time necessary to promote and develop the new routes and the unanticipated turndown in traffic. However, the last two subsidy rates have moved a long way toward full payment for service on subsidy-eligible routes and, hopefully, we can look for substantial improvements in 1972.

Of course, a prime reason for embarking on the route strengthening program was to give local service carriers sufficient economic strength to effectively serve small loss-points on a route system. In this sense, therefore, the route strengthening program and service to small communities are not at variance with one another and actually are intended to complement each other.

This leads me to express a few thoughts on a major item on your agenda for this Quarterly Meeting, namely, legislation developed in the Board and introduced in the Senate (S. 3460), which would authorize the Board to enter into contracts on an experimental basis with air carriers to provide service to small communities. This proposal, as a restrained experiment, may give us an answer as to whether there are more suitable means of providing a level of more frequent and adequate service to a limited number of the small communities in various parts of the United States.

The Board's legislative proposal emerged from a three-volume study recently prepared by our Bureau of Operating Rights. I assume you are still studying this document and I imagine that you, like me, will find many things in it with which you agree and disagree. I am sure you fully appreciate that this publication is purely a staff study by the Bureau of Operating Rights and does not in any way represent conclusions or decisions of the Board itself. It is very important that this study *not* be seen as a Board proposal for wholesale abandonment of smaller cities by the local service carriers or a plan to turn all of these cities over to commuter airlines. The Board's views as to the amount of subsidy warranted to serve a point, the isolation of communities, and the traffic levels which merit service are, and will continue to be, determined on an *ad hoc* basis in proceedings before the Board. In my view, they cannot be determined on the basis of theoretical standards or mechanical criteria of isolation, traffic or subsidy dollars.

Let me briefly turn to another aspect of the public interest, namely, the voice of the consumer in our regulatory life and times. Some time ago the Board established an Office of Consumer Affairs. It is performing a valuable service. It needs the attention and support of the industry. And, I believe, in most cases, it is getting excellent cooperation. Tonight, I want to express my congratulations to North Central, Southern and Piedmont, in that order, for their recent impressive records on consumer complaints to the Board. The table of statistics published by our Office of Consumer Affairs showed complaints per hundred thousand enplanements in March of only .97 for North Central, 1.88 for Southern and 3.07 for Piedmont. The complaint letters for all three for the first quarter of this year were significantly below the first quarter of 1971. Obviously, these statistics are for letters received only, and there has been no determination of their validity. I believe, however, that they are a measure of the temper of the aroused and articulate consumer of today and, as such, are a matter of great importance and merit your continuing attention.

I also want to express the Board's pleasure with your renewal of the "Visit U.S.A." program. I refer to it whenever I have a chance to talk with aviation and travel representatives of other governments. I urge that they vigorously publicize to their own citizens and travel industry that, for $150, a foreign citizen can enjoy unlimited travel all over the continental United States for 21 days. There is a great need to make the international tourism market more of a reciprocal exchange. For example, in the giant North Atlantic market more than two-thirds of the passengers consists of American citizens. We need to make that market and others more of a two-way street for many reasons, including that of dollar outflow. I don't know of a more significant assist in meeting the balance of payments problem as far as tourism is concerned than this valuable local service program. Moreover, it is important to note that it is in keeping with the views so often expressed by Senator Magnuson and his colleagues on the Senate Commerce Committee.

Let me conclude by recounting an incident which occurred in the course of negotiations some few years ago with aviation officials of an Eastern European country. Following a long session of conferences in their own country they journeyed to Washington many months later to complete them. Our negotiations had been directed only toward long international trunk routes. As a respite from the formalities attending such meetings, I invited them to the Civil Aeronautics Board for an informal visit and leisurely discussion with some of us and the staff. The Chairman of their delegation soon noted the route map of our local service system which graces a wall in our Board Room. He examined it closely and in great detail.

From then on, the entire dialogue had nothing to do with international aviation, but rather revolved about his questions as to our ability to mount and maintain such a tremendous coordinated system of service to the small towns and cities of this country. At his request, we furnished him with much of our public information on the subject. It was obvious that he was most amazed and most admiring of what we had achieved and he wistfully expressed the hope that perhaps, sometime in the long-term future, his country could seek to emulate us. It was apparent that he recognized that air transportation could not be regarded as an instrument of the public unless it could be shared by the masses of people scattered throughout a single country. I have always thought of this incident as a tribute to what we in Government and you in private industry have jointly accomplished. I have thought of it, too, as a commendation of the singular efforts of General Joseph P. Adams, the tireless Executive Director of your Association, who has devoted so much of his life, both in Government and in private life, to the sincere promotion of the local service system. Recently, a senior and distinguished aviation writer, Eric Bramley, has referred to the General as "The local airlines' one-man gang in Washington"—a term of both respect and affection, which he enjoys in all circles.

No other country in the world has what we have in terms of air transportation in the United States. This may not be true of other modes of transportation. I would like to think that we will stand by our traditions and work cooperatively to make that part of it composed of the local air transportation system not necessarily bigger, but a great deal better.

## DETERIORATION OF OUR TRADE BALANCES

Mr. DOLE. Mr. President, Congress and the administration have been concerned about the deterioration of our trade balances. The one bright spot in our efforts to adjust the position of our international trade and monetary accounts has been agriculture.

Our agricultural trade produced a positive balance last year, while other sectors were recording deficits. As we approach the end of the current fiscal year it is once again in a strong position.

I think we can take some credit for the $2 billion gain in agricultural exports since fiscal 1969 that led to the all-time record of $7.8 billion last fiscal year. This body, working with the Department of Agriculture, rewrote the Federal farm programs 3 years ago to emphasize export markets. We have authorized, funded, and supported overseas market development in the highly competitive international market.

So Mr. President, I cannot support that portion of S. 3526, which would require a reduction in the number of American personnel who are representing us in the very markets we have been trying to expand with what we have done in Washington.

There are only about 200 of them—representing U.S. Agriculture to scores of countries and hundreds of millions of people around the globe. You do not sell products by bringing your salesmen home. I am opposed to this section of the bill and support the amendment offerred by the Senator from Oklahoma (Mr. BELLMON).

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## A CHILDREN'S HEARING

Mr. HARRIS. Mr. President, on April 12, several other Senators joined with me in sponsoring a children's hearing. Our purpose was to focus attention on the pressing problems of children in the areas of health, education, nutrition, welfare, and children's rights. Several distinguished witnesses presented what I consider to be excellent testimony and timely suggestions on how we can deal with the problems of our Nation's children. Even more impressive was the testimony of children and young people about the problems they face and the distressing lack of action on those problems.

One of the conclusions of most witnesses is that regressive legislation such as that embodied in the administration's welfare proposals can only worsen the situation of today's children and youth. Recent action by the Committee on Finance is even more regressive than the House provisions in H.R. 1. I am hopeful that Senators will take the time to read the moving statements of these children and of the adults who accompanied them. I think it is time that we in Congress pay more attention to assuring that the programs we implement will indeed help those most affected by them. The first half of the text of the hearing follows; I ask unanimous consent that it be printed in the RECORD.

There being no objection, the transcript was ordered to be printed in the RECORD, as follows:

TRANSCRIPT OF THE CHILDREN'S HEARING HELD ON APRIL 12, 1972

Senator HARRIS. This is an ad hoc public hearing sponsored by several members of the Senate who will be participating during the day. Senator Philip Hart of Michigan is here now. I'm Senator Fred Harris of Oklahoma. Several organizations have been involved with setting up these hearings: The Children's Foundation, the National Council of Churches, the National Welfare Rights Organization, the District of Columbia School Board, the Washington Research Project Action Council, and over fifty other day care and church related organizations, many of whom participated in the recent Children's March for Survival.

The hearing is designed to focus attention on the issues and problems of children. Many of us in the Senate have been trying over the past years to deal with the crucial problems of education, child care and nutrition. Those efforts have been systematically stymied by the present Administration. We're now faced with what I consider to be a regressive step in the treatment of the nation's poor children through provisions in H.R. 1, the Administration's so-called welfare reform bill. I, and other members of the Senate who've been increasingly concerned about the inability of the Congress to enact meaningful child development legislation, to assure adequate nutritional programs, and to implement needed educational programs, feel that it is time to make a concerned effort to bring to light the severity of children's problems. Perhaps if we can bring to the attention of the Administration, the Congress, and the country the unacceptable conditions under which many children in this country live, we can help move toward solutions of the crucial problems we now face.

We have with us today some outstanding people who've worked hard over the past many years on the problems of children's health, nutrition, education, child development, children's rights, and child welfare. With them are the real spokesmen and spokeswomen today, the children with whom they work. I think we too often forget that much of the legislation we deal with affects children and should be geared to their needs, not the needs of the adults who administer the programs. It is fitting then that we have several young people with us who can tell us their own experiences and their needs. I'm hopeful that we can have an as informal and open discussion as possible. Some of those testifying have prepared statements, some have not. All, I think, are willing to participate in a comprehensive discussion among members of the Senate and others with these expert witnesses and these young people.

The hearing will be transcribed and printed in the CONGRESSIONAL RECORD. Those of you who are here and others who would like copies of the transcript later on can drop me a note and I will be glad to provide them.

Before we proceed, Senator Hart, do you have any opening statement?

STATEMENT OF SENATOR PHILIP A. HART

No, Mr. Chairman, except to say, thank you and the many organizations that are making this possible, and to apologize for what will seem a very rude and indifferent act on my part. I must leave almost as I conclude this statement to go to a meeting of another committee, a closed meeting, where the question of the continuation of the investigation of ITT and related matters will be under review. Once that meeting moves into the open hearing, I will return here, Mr. Chairman. I'm delighted the media is here. But there will be a lot more attention and energy concentrated in the Judiciary Committee inquiry into ITT than will focus on the problem you address here. But there will be greater truth, whole and entire, from the witnesses we will hear here than from those we have been listening to in the Judiciary Committee. And they will be speaking to a problem that is curable. Unlike the problem of impropriety in government, which will be with us as long as man is fallible, we can make a categorical decision to eliminate malnutrition, and do it. We can reduce infant mortality rates, we can do it. So I think there is a much higher degree of importance to what is going on in this room than in the room to which I shall now go—and I hope briefly.

Senator HARRIS. As director of the West 80th Street Day Care Center in New York City, Dorothy Pitman Hughes is familiar with both the problems posed by urban poverty and the need for adequate day care for poor children. She is the mother of three, an activist in the women's movement and Chairwoman for the Committee for Community Controlled Day Care in New York City. Mrs. Hughes, we're glad you're here. Would you please introduce those who are with you and then we'd be glad for you to proceed however you want.

STATEMENT OF MRS. DOROTHY PITMAN HUGHES, DIRECTOR, WEST 80TH STREET DAY CARE CENTER, NEW YORK CITY

Thank you. This is Tjitana Neblet who is four years old and attends the West 80th Street Day Care Center; this is Lee Vasquez who is five years old; this is Patrice Pitman Hughes who is seven years old and attended the day care center since she was six months old; Raymon Cala has been with us for three years and is six; Julia Cunningham is five and has been in the program since she was six months; Darnell Williams is six and he has been with us since he was about two years of age. They will talk to you and answer questions.

Before, then, all the members of this hearing I've come with these children who attend and have attended the West 80th Street Day Care Center, one student from the College of Human Services and one of the teenagers in the community that I work with in one of our youth development programs. I've come to comment on the H.R. 1 bill, and I would like for you to accept my definition of H.R. 1. I feel that it is the first real public relations piece and plan for implementing total fascism. To insure that H.R. 1 gets past, more and more repression has been happening in the community to keep us busy while the people that are fighting to get this passed really don't understand our struggle. We were here and these children were here in the Survival March. And we went back to New York to face parts of the H.R. 1 program already being implemented, under different names. I don't know if you've heard them, but they are becoming very familiar words in our community. One is called PSWOP. PSWOP is the Public Service Work Opportunity Program. Another one is called IFI—Incentives for Independence. We've had to go back home to deal with those programs, and so we've supposedly left our concentration on the H.R. 1 bill. But we found out very quickly that they were very close and much of the same thing.

In 1970, President Nixon introduced his welfare reform bill, now called H.R. 1. It didn't pass in 1970 or 1971 and so President Nixon is trying again in 1972. Taking its cue from Nixon, New York State passed the new work rules for welfare recipients in 1971. These work rules were and are the basis for PSWOP and IFI. They require most adults to look for work or to be cut off welfare. But New York wasn't satisfied with forcing welfare recipients to look for work; it wanted to force them to work. So it made home relief recipients, who were able to work, work off their grant in city agencies. New York wanted to force AFDC families to work off their grants too, but it couldn't because AFDC families, unlike the home relief families, receive federal money and HEW used to say that it would not pay for work relief. Somehow we always get shuffled around and when the need arose Governor Rockefeller

met with President Nixon and they agreed to develop demonstration projects—the projects we are now suffering from. In New York, we have had to shift our attention to these programs because parents of many of these children that I work with have been forced to go to work for welfare checks. Because we who work in day care have been asked to drop our waiting lists of people who need services to prevent themselves from going on welfare to give priority to the parents who will be forced to work. Because the teachers in the public schools and the social workers from the Department of Social Services tell the mother that five of her seven children must go to the psychiatrist. When the mother rejects this and objects to them giving her children pills, dope, the parents' welfare check is cut off or reduced and sent late.

Because this welfare program announces to the parents of this nation that if they are on public assistance and their child or children are not doing well in school, the mother is sent to a psychiatrist. This kind of fascism doesn't just control the mother and the children, it has extended itself through H.R. 1 to the father. And it says something about if he goes across the state line—and it doesn't give very much definition about what for—it becomes a federal offense and he could be put in prison.

You look at the children around me. You may notice that if you just talk with them you would know that they have no problems with socialization, they have respect for each other, and humanity. I would say that they are far superior to the people that wrote and designed and planned and plan to implement the H.R. 1 bill, IFI and PSWOP. The child care program that they attend is one that has a goal to end racism, classism and sexism. Their parents are together and involved in the struggle for survival. Yet some of these very children and their families were, and are, on welfare. If H.R. 1 is implemented, the families of these children are subject to live in fascism. These children may very well in six months be in a concentration-camp-type child care center, instead of one which is helping them and their families to come together and to survive. We learn also that even being brought into it as a day care worker that we are really needed and so we refuse to accept forcing people to go to work. We aren't really needed for that because franchised day care is going to be subsidized by the federal government so that concentration camps can be set up. Parents who are on welfare will have to take five other children into their home while five other families go out to work for welfare checks.

PSWOP work will be slavery and not jobs. A recipient will only be allowed to work long enough to pay for his grant, no overtime, no way to earn more than a substantial welfare budget, not even a substantial welfare budget. Of course, it would be easy for a person to earn less than a substantial welfare budget. If he misses work and his supervisor decides that he or she didn't have a good reason, and if they decide that the person is just being uncooperative the welfare grant can be taken away and it would be very hard to get on welfare again. PSWOP makes no provision for vacations, sick leave, promotion, pay raises, seniority, or job security—all of the things that a real job is supposed to give you. It's slavery in every possible way you may think about it.

I would hope here that we could do something about destroying H.R. 1. Even if H.R. 1 is destroyed, I have a feeling that we in New York will still have to work very hard to destroy PSWOP and IFI. But we're ready to do that because every time I've attended a meeting in the last two months, I've felt that I was called into a meeting—not by Jule Sugarman or Mayor Lindsay—but by the same person that many of us don't even want to talk about any more, because it is too painful to know that we as people have helped to put six million Jews into gas ovens to be burned. People might not think about it, but I as a black woman have to know if I am called into a meeting and asked to implement these fascism programs—H.R. 1, PSWOP and IFI—against the people that I work with, I have to know that there is no difference in what Hitler did and what is going on now. I would rather, and I hope that many of you here would rather, walk fighting rather than help other people who live with you and work with you to be killed, to walk into ovens. It can be done; it has been done.

If you don't know anything that's written based on people being shiftless and lazy, and this is the reason for most of this legislation now—people would rather be working at real jobs. No incentive programs can be built any better than the incentive programs and community child care—the incentive programs in any kind of community controlled programs where people are trying to get jobs. It has been built into the programs. Everybody knows that this economy doesn't have enough jobs to give people, so why play around with people's lives. If everyone were given a job the country couldn't stand it. It's just learning for the first time with the women's movement that people are not free to make choices under this system. And so it must control the number of people if it's going to continue. I would ask you to check out the mal-attitude of this legislation as it pretends to tell you that people are lazy and shiftless and that they are a burden to taxpayers. I'm saying that it's going to cost much more money for every parent in this country whose child is not doing well in school for that mother to be sent to a psychiatrist—that's going to cost a lot of money because psychiatrists charge from $50 up. Who is paying it—the Department of Social Services. It's coming from taxpayers dollars. It would cost much less to give everybody a living wage that people have been asking for. We aren't going to stand for it; we are not going to let our kids take pills in school because somebody is going to classify them as hyperactive. We're not going to allow neighbors to be forced to work in jobs that are not jobs, that are slave labor. We just can't do it because every little bit of life that they take is ours. Thank you.

Senator HARRIS. I appreciate very much your statement. Do you think that if there were really quality day care and jobs at decent salary levels, don't you think that people would work on a voluntary basis?

Mrs. HUGHES. Yes. We've asked. They say that they have 950 jobs. Those of us who were called in asked if we could get people to volunteer for those jobs because we could fill those jobs by morning. We were told that they could not volunteer for those jobs, that it is a work-off program and that they would have to be referred by the welfare centers. Of course, people want jobs. In New York City, more than 2,000 people who had civil service jobs were fired over the last two years. They had no jobs to go to so they are now on public assistance. They are going back into those same jobs that they were getting paid for before at union wages and working it off as a welfare check.

Senator HARRIS. Are these children here all in day care?

Mrs. HUGHES. They are all in day care except Patrice who is graduated from day care and is now in the community schools.

Senator HARRIS. Are they all in the same day care center?

Mrs. HUGHES. Yes.

Senator HARRIS. Who sponsors the center?

Mrs. HUGHES. I'll give it to you my way. I've been working since I was sixteen years old and I've always paid taxes. They said to me that a percentage of my tax dollar was going for education. I had my first child when I was 21 years old, and I figure that the country with my educational tax dollars is paying for my child's child care services. We are paying for it as parents with our tax dollars. It is being paid for by tax dollars from the federal, state and city government to implement 97 percent of the program. The rest of it is being raised by us as parents and the building that the day care center is in—we were once in a storefront for five years in one of the three largest crime rate and narcotics centers in New York City. Thirty-six parents got together, 16 of whom were on welfare when we began and were off in three months—and raised over $500,000 and bought our own building. It is owned by any parents and children who go in there. It's owned by the community. Six dollars was collected from people on one street, but those people on that street know that they own that building. That building is owned by us and was renovated by us and is used by the community. It's both economically and racially integrated.

Senator Harris: Tell me about various day care centers that you've had some contact with, about their relative quality and so forth. Would you also comment on franchised day care centers, which you mentioned? I'm awfully worried about how we're going to get into that as some kind of non-community controlled and non-parent involved business if we were to pass the provisions that President Nixon is recommending in that welfare bill.

Mrs. HUGHES. The day care centers that I am working with are the very opposite to the reason for President Nixon's veto of the Comprehensive Child Development bill. These day care centers have been instrumental in bringing families together. If you know anything about day care was for, it was used first as a part of war production. When that was over, at that time, they were about to be closed up but people kept them open. Then they were used as a welfare program. Now they are being used as educational services. A day care center is very, very educational. It teaches children by experience. Reading is no good unless you have some experience with the letter. One of the things we do in West 80th Street Day Care Center, and I'm going to speak for that center, instead of teaching a child to count one, two, three apples, if we are not around apples, we will teach them to count one, two, three narcotics pushers because there is something very real in that. They are learning to count and they are also learning who those people are who would be contributing to their death at a very early age. It is also supporting the community in that if children are walking around counting pushers, they don't stand there very long. Everything is done with relevancy. All the parents are the members of the board of directors. You notice that I say "parents" and I don't say "mothers" because parents are involved. The children are growing and developing and being educated not to be trapped into a cheap labor force but to understand more than that, to understand humanity, to be together, to work together, to live together, and also to have many skills rather than get to be 40 years of age and have to go and learn another trade. The parents are communicating with other parents and so the children are learning to respect each other and each others' values. They know that other people have values even though they have different skin colors. The parents are beginning to do that. We are beginning to respect each other and each others' values. We're beginning to respect each other as human beings, male and female.

The children are getting practical education, and it brings families together. Parents in the Center are able to say to their landlords, "I'm not going to pay you $5 this week because I didn't have heat for a day or two

days." It's changing. There's a movement. I was told by Senator Buckley's aide that we were trying to make child care desirable for all people when it was designed to be a welfare program, and that was dangerous and they weren't going to let it happen. These day care centers really are organizations for communities and organizations for parents and children to come together.

Senator HARRIS. Very good. Let me ask the children some questions. Tjitana, do you have any brothers or sisters? One brother? Do you like to go to the day care center?

TJITANA NEBLET. Yes.

Senator HARRIS. What do you do there?

TJITANA NEBLET. Play. I play house.

Senator HARRIS. Do you have meals there?

TJITANA NEBLET. We eat there.

Senator HARRIS. Is the food good?

TJITANA NEBLET. Yes. We have spaghetti and meat balls.

Senator HARRIS. Lee, how many meals a day do you have there at the day care center?

LEE VASQUEZ. Three. In the afternoon we have snacks. In the morning we have breakfast, and in the middle of the day we have lunch.

Senator HARRIS. What do you have for breakfast usually.

LEE VASQUEZ. I usually have my cereal at home and most of the time have toast and juice.

Senator HARRIS. Do you like to go to the day care center?

LEE VASQUEZ. Yes.

Senator HARRIS. What do you do there? Do you learn things?

LEE VASQUEZ. We learn to make things out of clay and how to build with blocks.

Senator HARRIS. How many brothers and sisters do you have?

LEE VASQUEZ. I have a little baby sister.

Senator HARRIS. Does your mother come with you to the day care center sometimes?

LEE VASQUEZ. She takes me every morning and my housekeeper picks me up. And most of the time my daddy picks me up. Sometimes we walk and sometimes we go by car.

Senator HARRIS. Patrice, you graduated into public school, community school, now. Is it near your home also?

PATRICE PITMAN HUGHES Yes, on 81st Street.

Senator HARRIS. Did you learn how to read or count before you went to school?

PATRICE PITMAN HUGHES. I learned how to read one whole book on the little book rack.

Senator HUGHES. What other things did you learn in day care center?

PATRICE PITMAN HUGHES. Counting and working with clay and stuff.

Senator HARRIS. What about you, Ramon, do you have any brothers and sisters?

RAMON CALA. I have a little brother.

Senator HARRIS. How do you get to the day care center?

RAMON CALA. I walk.

Senator HARRIS. What do you learn there?

RAMON CALA. Sounds. Like an "a".

Senator HARRIS. How old are you?

RAMON CALA. Six.

Senator HARRIS. Do you eat all of the meals there at the day care center that Lee eats?

RAMON CALA. I eat everything.

Senator HARRIS. Darnell, tell me what you learn at the day care center.

DARNELL WILLIAMS. We learn words and colors.

Mrs. HUGHES. "Words and Colors" is the reading program that they're using.

Senator HARRIS. Ramon, do you speak Spanish?

RAMON CALA. Yes.

Senator HARRIS. Well, good. Mrs. Hughes, can you think of anything else we'd like to hear from these children?

Mrs. HUGHES. I'd just like to say that one very important thing is that these children are very important to us and we intend for them to have a good education. In order to do that we have probably a better integrated, racially and economically, school than the United Nations. There is a man in every classroom at West 80th Street. We have infants from two months old up and their total development is following, through each classroom. We have a strong health program. We have a pediatric nurse who is in charge of the infant program and toddler program. We have balanced racially our classroom in that we have, as much as possible, white, black and Spanish-speaking, either Puerto Rican or Santo Domingan, in each classroom so that each child is able to relate to someone personally and value-wise.

H.R. 1 is going to knock out any possibilities for this kind of child care-child development. It will also knock out possibilities for life in that we cannot expect to have any kind of educational system that does not include the family. If we continue to give education in isolation of the family, we will continue to create a difference in that family and split off the parents from the children, and nobody is really growing. It is very important that H.R. 1 is defeated and that all the accompanying programs that are like H.R. 1 are defeated. If not, we all take the responsibility for the death of these children and their parents, and me.

Senator HARRIS. Thank you. I think the children demonstrate much better than could be told, what can come from a family that is together and involved with a community-controlled day care program—that's really the right kind of program, rather than what we've been talking about where people will be forced to send their children to day care centers the quality of which they object to and in which they're not involved. Anybody who thinks we're going to do that these days is just living in the wrong century, I think. And I think what you've demonstrated here is the kind of thing we might begin to see around the country if we can get that Day Care and Child Development bill passed which the President vetoed last year. Thank you very much. Mrs. Hughes, and thank all you young people for coming.

I want to call next on Dr. Raymond Wheeler of Charlotte, North Carolina. He is an expert on child nutrition and health care, and one of the nation's leading advocates of adequate feeding and medical care programs for poor children. He was a member of the team of doctors during the late 1960's who personally investigated hunger and related health problems in the South and later published "Hungry Children." He is a member of the Citizens Board of Inquiry into Hunger in the United States which is best known for its publication, *Hunger USA*. Dr. Wheeler is also Chairman of the Executive Committee of the Southern Regional Council. Dr. Wheeler, we're pleased you're here.

STATEMENT OF RAYMOND WHEELER, M.D., CHARLOTTE, N.C.

Thank you, Senator Harris. Ladies and Gentlemen. During the past five years, to which you have already referred, serving both as a member of the Citizens Board of Inquiry into Hunger in the United States and also as a consultant with the Field Foundation, I have examined children of the poor in North Carolina, Mississippi, Alabama, Florida, Southwest Texas, Appalachia, and in some of the ghettos of northern cities. I've talked with the parents of these children; I've visited in their homes and their schools. There isn't time for me to described to you in any detail what I have seen in my travels. Nor do I think it is necessary. Most of you have already heard the earlier testimony of my medical colleagues and others of you have seen and heard about sick and hungry children as part of your own investigation and through documentaries and numerous surveys and studies.

I think the case against hunger and malnutrition is now established beyond debate. There are countless families with large numbers of children in America today who are isolated from the mainstream of culture and opportunity, possessing none of the protections of life and jobs and health that most Americans take for granted as a right of citizenship. By our own government estimates, there are at least 25 million poor people in the United States today. Twenty percent of these, or five million people, have annual incomes so low that if all their money was spent on food they would not have enough to purchase a minimally adequate diet. Although the rest are better off, unless they are receiving some kind of food assistance, they are certain to be victims of poverty-related hunger. Among these 25 million poor, there are at least 8 million children who are spending their formative years in a grinding poverty which absolutely guarantees they shall have no future in our society. Malnutrition before and after birth has already impaired them physically, mentally and emotionally. They will not have the capacity to engage in any substantial mental or physical effort which is necessary to succeed in school, to learn a trade, or to assume the full responsibilities of citizenship in a complex society such as ours.

Now that we know the facts about hunger and malnutrition, what becomes most important is that we understand these conditions not just in terms of human misery, but in terms of how they affect the strength and vitality of the society in which we live. First, a poorly nourished child will be more likely to become ill than to throw off an infection. He will be sick for a longer time and his body will be so exhausted from one illness that he will be even less resistant to another. Many of these children will die. In the 300 counties of the United States where hunger is most critical, the infant mortality rate is more than twice the national average. Secondly, the evidence is mounting that malnutrition damages the brain as well as the body. The human brain reaches 90 percent of its full growth before age 4 years. If a child's protein intake is deficient during that critical period the brain just never does develop properly. Scientific evidence increasingly has demonstrated that malnutrition sufficient to impair growth in infants and young children impairs also their learning ability, their memory, their adaptive behavior, and in turn prevents these children from obtaining their full mental capacity and their social development.

There is a third way in which malnutrition can impair both learning and performance. Lack of food produces pain—physical discomfort. It produces lower energy levels. Children become apathetic and irritable. Their ability to concentrate may be impaired. Behavior problems as well as failure in school result. By not feeding children adequately we actually may be negating all of our efforts to educate them. And we may be creating problems for the future. Many of the children grow up distrusting society and in conflict with it. They may become psychological cripples. How we feed our children may have a direct bearing on their capacities for social adjustment, on the potential of our society for crime and disorder, and on the perpetuation of the effects of malnutrition from one generation to the next. All the available data indicates that the children born of and into poverty are malnourished, are frequently ill, often develop irreparable brain damage. They become slow learners who wind up living in poverty and producing children who grow up in this same vicious cycle which condemns them to lifetimes of marginal function. Their lives are characterized by high rates of failure in school, by behavioral disturbances, and physical disability, and ultimately by low levels of employability. Our own Bureau of the Budget has already calculated that for every dollar we save by not feeding people who are hungry and malnourished it costs our nation $3.30 in lost income and productivity by people who are

sick or are incapable of performing a job adequately.

It seems to me that if compassion and a desire to restore blighted lives is not enough, perhaps the prospect of a 330 percent return on our investment might make it easier for the government to decide that it can afford to spend some of our tax dollars to eliminate hunger and poverty in the United States.

We know the facts about hunger and malnutrition. We know what conditions do to people and what they do to our society. But perhaps knowing all that isn't really the most important thing. Perhaps we ought to stop talking about hunger and poverty and turn the educational process around and direct it to ourselves. Perhaps we should be asking whether the accumulation of property and wealth, the expansion of our technology at the expense of the quality of our lives really justifies what we are allowing to happen to the children I've described to you today. Perhaps we need to look into our own hearts to find out why we have not demonstrated as a nation the capacity to respond to the plight of 8 million children in our midst who have little hope of meaningful lives. I think it is time that we face the truth that Americans don't really like poor people. At times, of course, we show benevolent concern, we even do minor good works while preserving unchanged the power of the institutions which dominate our society and which perpetuate poverty. We've convinced ourselves that if a man is poor it's by his own doing and all he needs is a little initiative to take advantage of the opportunities which are available to him.

It's very easy and much more comfortable to ignore the fact that welfare recipients are not able-bodied men who are too lazy to work, but rather mothers with dependent children, and the blind and the elderly and the physically disabled. In North Carolina, where I live and work, one-half of our families earn less than $4,000 a year. Half of those families are white. One-fourth earn less than $2000 per year per family. Only 25 percent of the poor in North Carolina receive any welfare assistance. Eighty percent of the poor in that state, who are able to work, and who can obtain jobs, work daily to support themselves as best they can. Furthermore, 40 percent of them work more than 40 hours a week. They are not lazy, but because of circumstances of race, of lack of education, of lack of vocational skills, low wages, high prices, large families, they remain poor and many of their children do not get enough to eat. It's long past the time that we should have put aside our punitive, moralistic attitude toward the poor. I believe that when we have failed to cure man's ills or to provide him with a marketable skill, our social system has failed that man. We have an obligation not just to him, but to ourselves, to provide him with a minimally adequate subsistence that will permit his children a decent chance to make it in our society. We must make certain that in this nation, in this world, no child will ever again know the pain, the humiliation, the loss of opportunity which are the heritage of the poor and the hungry.

There is much that can and should be done immediately. The one most important thing that we can do to lengthen and strengthen the lives of our people, to increase their productivity, to reduce the amount of sickness and death, to remove the hostility and the despair which possess so many, is to feed adequately those who do not have enough to eat. None of the existing food programs has proved sufficient with the problem of hunger. There are people who do not have sufficient food or the money to buy it. We must develop a system to deliver it, to deliver food in adequate amounts to people who need it. And I know of no proposal short of an adequate guaranteed income to every person in our country that will accomplish this objective and I say adequate with emphasis, because I don't think H.R. 1 meets that criterion.

As an interim measure, until an adequate minimum can become effective, or as a supplement to an inadequate minimum income, there should be free food stamps available on the basis of stated need. These should be certified simply on the basis of annual income, number of people in the family and medical expenses. I've never understood the philosophy of a program which determines that a man does not have enough to eat and then requires him to pay money for stamps. Both of the present food assistance programs, in my opinion, should be junked immediately in favor of a free food stamp program.

Secondly, we need an effective national health policy. This perhaps could be created by a Joint Congressional Committee on Health Policy which might be able to pull together the public and the private functions now provided, or not provided, by the fragmented, the overlapping and the inadequate non-system of health care which exists today in this country. I think we tend to forget that health is a broad social concept that encompasses not only illness but a complex interrelationship of genetic, psychological, social, environmental and pathological factors, all of which affect the individual's ability to perform his life task effectively. The existing medical complex, no matter how it is restructured or paid for, may actually be irrelevant to the central health issue. The doctor is helpless for many ailments which account for most of the sickness and death in the United States—heart, kidney, blood vessel disease, much cancer, alcoholism, drug abuse, accidents, the ravages of poverty and malnutrition. In the modern world, housing; nutrition; accident prevention; sanitation; clean water, food, streets and homes have all improved health conditions more than perhaps all the doctors and hospitals combined. Health indices seem much more related to poverty levels within states than to the number of doctors within those states. A program of national health insurance is certainly desirable, but it may serve to increase the demand and therefore the cost of medical care while doing very little to improve either mortality or morbidity statistics, unless we're willing to put more effort into the areas of adequate nutrition, housing and sanitation, especially for the poor.

Most existing health programs today simply do not reach those whose need is greatest, just as the food programs do not reach those who need food most. There is one exception, I believe, and that's the program of the neighborhood health centers funded by the Office of Health Affairs of OEO. This is the one program that I know about which is designed to deal with health and environment as they ought to be dealt with. Ways must be found to strengthen this program, extend it not only to the urban areas of the country, but also the rural areas where this kind of approach to health problems is desperately needed. I think that with this type of approach we can begin immediately to improve the health of our children, to deliver comprehensive health services, to improve the conditions in which women have children, and offer assistance to parents in limiting family size. This is the kind of program, I think, that deserves the enthusiastic support of the entire country. It was distressing to me to find that as far back as the beginning of medicaid, legislation contained the requirement that all children under the age of 21 should be provided with screening, physical examinations, diagnostic services where needed, and treatment where illness or disability was discovered. And not until this year has any real effort been made to implement those provisions. The Senate Finance Committee, however, recently voted to postpone and dilute these needed services.

I hope that this committee will make every effort to see that these benefits are restored to the program. For those of you who are interested in more details of this, I would refer you to the *Congressional Record* of Thursday, March 30, in which Senator Mondale has a statement outlining the problem in more detail.

Finally, I'd like to say that as meaningful and productive as this hearing today may prove to be, it strikes me also in another context—it's absurd. In the richest, most powerful and historically the most generous nation in the world, containing most of the wealth and productivity, it should not be necessary that we meet here today to try to save the lives of children who do not have enough to eat. It's shameful that we've not already used our resources to make certain the right of every child to strength and health. Let a hurricane strike or a mountain valley be flooded, and we see immediate action. Let children suffer quietly of hunger and disease, their potential as human creatures destroyed, and this disaster is simply ignored. You, Senator Harris, have chosen not to ignore, and I congratulate you, for it is an effort such as yours that may eventually make our system work as it is supposed to. Thank you very much for affording me this oportunity.

Senator HARRIS. Thank you. It doesn't make much sense to say to a child that comes out of the background that you've described with poor health and bad nutrition, why don't you pull yourself up by your bootstraps, does it?

Dr. WHEELER. No, indeed, it doesn't. These children are, of course, trapped in situations over which they have no control and are subjected early in life to all the environmental forces which serve to perpetuate their continuing to live in these circumstances. To break out of it is, in most cases, really a superhuman task. A few break out, but not many do. It's so easy for people to turn their eyes away from the obvious fact that there are people in unfortunate circumstances, by virtue of circumstances and not by virtue of any particular characteristic of the individual. I suppose most people in this country today are so devoted to the status quo and believe so thoroughly that the society in which we live can do no wrong, that to look about them and admit that they see a vast group of disadvantaged people simply challenges everything that they believe in. They would have to admit that there are some things about our society that need to be changed, and, they simply can't admit this. And so it's much easier either to deny it or to blame somebody for not lifting himself by his own bootstraps or simply to stick one's head under the pillow and hope it's all going to go away someday.

Senator HARRIS. I like what you say about the really strange feeling of punitiveness toward poor people that exists in this country. I've said on other occasions that it seems weird to me that we want to punish the poor. I've been poor and I think that being poor is punishment enough. It's no use adding any more punishment on to it.

Two things you've said are really basic. So much, if not most, of the basic human problems in America are tied back to the distribution of income—that if you have income you are much more likely to be healthy and if you don't you don't have nearly the chance. And the same is true with regard to nutrition. You've said, for example, that there is a correlation between health and poverty levels, and by increasing people's income is probably the best way by which we've affected health levels. And you've said the best way to assure people enough to eat is by a decent income maintenance system which, as you said, H.R. 1 is not. I think that is really basic. Even when we can get people to get involved in some of these problems the tend-

ency is to treat symptoms. I think it's important that we talk about the people's right to income and then their right, as a result of that, to buy health and to buy enough to eat. In the meantime, I agree with you that at the minimum a child in America ought to have a right to enough to eat, in the richest, most agriculturally productive country in the world. Another thing I liked about what you said is self-interest. If we don't do right by that child to start with, it's going to wind up costing us more in the long run. Somehow we haven't been able to appeal enough on a basis of conscience, and I think maybe if we begin to talk in terms of the self-interest of people we can get somewhere. Thank you very much, Dr. Wheeler.

I want to call next on Dr. George Wiley of the National Welfare Rights Organization, who has been central to these hearings and will present our next witnesses. Dr. Wiley, perhaps you have something to say as well.

Dr. GEORGE WILEY. I don't want to speak, but I may stay and respond to questions. Bertha Cavanaugh and her two children Ann Marie and Bobby are here from the Welfare Rights Organization, and Mr. Peter Edelman who is a former legislative assistant to Robert Kennedy and worked through all the welfare legislation of 1967 is going to testify for us today. I'm particularly pleased to have Mrs. Cavanaugh who is on our Executive Committee of National Welfare Rights and her children here today because we want to stress today that the majority of children on welfare are white, and the majority of people on welfare and in poverty are white, and the people being most brutalized by this Nixon so-called Family Assistance Plan are white children. That is an important thing that people ought to understand in this legislation.

Senator HARRIS. Mrs. Cavanaugh, it's good to see you again, and also Bobby and Ann Marie. Peter, thanks for coming. Peter is also currently Vice President for Policy and Planning at the University of Massachusetts. Mrs. Cavanaugh.

STATEMENT OF MRS. BERTHA CAVANAUGH AND BOBBY AND ANN MARIE CAVANAUGH, PROVIDENCE, R.I.

My name is Bertha Cavanaugh and I am the mother of seven children. I would like to testify today about some of the welfare myths. My reason is simple, I am a welfare recipient. Myth number 1—that hard work is the answer to the welfare problem. I disagree with this wholeheartedly. My husband worked every day and worked as much overtime as his boss would give him. But his take home pay just wasn't enough to support a family of nine. So we had to apply to welfare for general public assistance. My husband is a very proud man and this was a blow to his self-respect; but we had no other recourse to feed our family. We were able to make it with this little bit of help that we got from general public assistance. Then we got hit with another blow, the doctors discovered that my husband had TB. This meant complete rest for four to six months. In Rhode Island it takes five to six weeks to start collecting TDI, so we again had to go to the Welfare Department. When, after seven months, the doctor finally said he could return to work, his employer had no job openings for him. He then went to the Unemployment Agency to apply for unemployment compensation. Now during this time, the Welfare Department was giving us $2.10 every two weeks to help us out. My husband was getting $72 every week from TDI. The TDI stopped. The welfare still at this point is giving us $2.10 every two weeks.

Senator HARRIS. What is TDI?

Mrs. CAVANAUGH. Taxpayers Disability Insurance. We've lost out on our food stamps. The only way I've really saved my food stamps so I'll be able to get them when we finally get settled is that I've been giving my food stamp card to other people to buy my food stamps. Because if you miss your place in the roll you lose them. We go to the welfare and we get a food order for $42 and five or six days later they give us a makeup check. The only way they're really helping us is that I don't have to worry about my rent because they pay it directly to my landlord. But it has left us in an awful fix. We don't have our bill money on time. We don't have the food stamps. We lose out on $37 worth of food every two weeks. That's really affected the children badly in their nutrition.

This has been a big hassle for the whole family. So I went out and tried to get a job. I filled out the application, which asked how many children in the family. Then you have to answer questions like, if you go to work would you have a reliable baby sitter so that they wouldn't have to call you up on the job? If one of your children became ill would you be able to stay in work or would you have to take off? If one of your children got injured would you have to leave work to take them to an accident room or something? After you answer all these questions to the best of your ability and think you have them believing that you can stay on the job, they say that with a family that large they think you should stay home to take care of your children. So if you tell a welfare mother to go get a job and she has a large family, I wish them luck because it doesn't work in Rhode Island.

Then, of course, I have a 16 year old son and he has been out of school 6½ months. He went down to DVR which is supposed to help you get into some kind of training. He's still waiting. He's been waiting for 6½ months for the Division of Vocational Rehabilitation to help him in any way at all.

My favorite welfare myth is the one about all welfare mothers do is have illegitimate babies. Well, it takes two to tangle, and I haven't met a woman yet who was able to produce a baby without the help of a man. So therefore, the child has a father. Maybe he doesn't have his name, but the mother still didn't do it alone. I think that's a helluva title to pin on any child, no matter if he's rich, middle class or poor.

And then we have the myth about those welfare recipients who own color tv's and drive Cadillacs. Who is to say if these people bought these items before they went on welfare. Are they supposed to give them up because some unfortunate thing happened to them and they landed on welfare? I'm not saying that this is always the case, but what difference does it really make; they sure didn't get it from their little welfare check. And it is the only enjoyment that the little welfare children have, and I wish they all had a color television set to look at.

Another myth is that blacks coming up north are the people on welfare. I don't believe that most welfare recipients are black and I don't think that any of you do either. Almost all of the recipients I know are white. But I don't see why such statements are made. Poor is poor and it doesn't make any difference what color your skin is. I have never heard anyone say—see that rich man, he is purple, green or orange. If they don't care about the rich and middle class family and what color they are, why such a big deal about the poor?

We know that a lot of organizations get their money by counting poor heads. But when are the poor ever going to benefit from it? If you are so eager to help the low income and poor, why not just give it to them directly? Then at least you will be sure that the right persons get the benefit of the money. If you give us any less money than you are giving us now, you won't have to worry about people living off the fat of the land. With all the starchy food we'll be forced to eat, we'll have to worry about people eating off our fat. Let's not turn the poor of our country into garbage can pickers. Let's live and let live. We all owe the children of this country this much.

I'm very proud to see Senator Pell here today. And I'm very glad he cares enough to listen to the poor people. Thank you.

Senator HARRIS. Peter, do you want to say a word before we ask questions?

STATEMENT OF MR. PETER EDELMAN, VICE PRESIDENT FOR POLICY AND PLANNING, UNIVERSITY OF MASSACHUSETTS

I appreciate the opportunity to testify, Mr. Chairman and Senator Pell. I congratulate you for holding these hearings. It shows that some members of the Senate at least, all too few unfortunately, are trying to dramatize the problems that children face in this country, in particular, as is my concern here today, those problems as they relate to H.R. 1, President Nixon's so-called welfare reform proposal.

I'd like to concentrate on H.R. 1, talking about children, but perhaps some other aspects of it too. It is in my judgment the greatest legislative fraud that I've seen in my experience working around the United States. It's not a measure to help the poor; it's a measure to control the poor. Indeed, if there were a question about this Administration's attitude, one might simply contrast the child care provisions of this bill with the fact that President Nixon vetoed a very constructive piece of child care legislation last December. This legislation, instead of trying to help children and provide child care for them, is essentially, as I will show in my remarks, designed to control their parents, control the poor and simply to stack children in day care warehouses while their parents are forced to go to work.

I would suggest that the reason why this legislation has been proposed in the first place is not to reform the welfare system, but rather because the welfare system is working too well. It's finally working somewhat, not satisfactorily—no one is certainly satisfied with it—but in the last five to eight years since the welfare rights movement has gotten organized and become greatly effective around the country, and since lawyers, particularly poverty lawyers, have gotten involved in issues relating to welfare, the welfare system has begun to reach people. There are more people than ever who qualify, not just because of the many unemployed under Mr. Nixon's economic policies, although that's also true, but because people have begun to solve the bureaucracy and because the courts have declared rights—rights to hearings, rights to assistance while a hearing is pending, rights to counsel, rights not to be stymied by unfair residency laws and so on. The fact is that welfare is working all too well. Too many people have solved the system and the Nixon Administration really has decided that they have to find a new way, a more effective instrument, of controlling the poor.

I've been greatly disturbed, Mr. Chairman, by the kind of support which this legislation has received. I think that we have a variety of reasons for it and we ought to understand them. I think newspapers like the *New York Times* are looking for something on which they can support the President. And even though the proposal is a greatly different one from the one which was introduced in 1969—we are now on the fifth or sixth draft and each one of them has been successively worse, the *Times* editorial people say, well we have to support the President on something. There are a lot of people who just don't know what's in the bill, and I hope that your efforts and those of others can continue the process of education before it's too late. And finally there are some who simply do want to find more effective ways of controlling the poor.

Now a real welfare reform proposal would have certain basic elements about it. It would provide assistance to all those who are

in need. It would provide incentives for people to work. It would be simple to administer and it would be administered with dignity and due process. I submit that the Nixon proposal, H.R. 1, Title IV, as passed by the House of Representatives, satisfies none of these elements. The providing of benefits is inadequate and because there is no requirement of state supplementation, in contrast by the way of the Administration's original proposal in 1969. Benefits may well be cut for recipients in 44 to 46 states, well over 90 percent of the present recipients of welfare. If there's is any doubt that that will happen, one has only to look at what legislatures all over the country have been doing. In my own state of Massachusetts, New York, Rhode Island, all over the country, in fact with the fiscal constraints that have been caused by the present Administration and that are now confronting the states, the first program that gets cut and has been cut repeatedly is welfare. The invitation is there in this legislation.

The forced work has been widely discussed and I won't go into it in detail, although it is certainly one of the most inhumane elements of this piece of legislation. Now, contrary to earlier drafts, mothers of children all the way down to the age of three will be forced to go to work under this legislation. An exemption will only be for mothers of children under the age of three. I think this is really quite astonishing that we are having this sort of slavery proposed under respectable auspices in this country. And the work has no standards: $1.20 wage, three-quarters of the minimum hourly wage; day care without adequate standards.

Indeed, HEW wants to define the adequate day care budget as costing $2370 a child, and in this legislation they have said that "developmental" day care would cost $866 a child per year. So that for their own purposes they have shaved the cost of adequate day care by two-thirds in a matter of two or three years time. People can be forced into jobs that are distant from their homes without having any kind of protection. This bill provides disincentives for people to work, not incentives, and it will be worse than the present law in that respect. The first $60 of earnings will be disregarded, $720 a year. That is said to be equal to the expenses of going to work. Under present law, the first $30 are disregarded but then all expenses of working are disregarded. You think about $15 as the expense of going to work—you think about carfare, clothing and lunches—the fact is it will cost considerably more than that to go to work. Then, for every additional dollar earned, a recipient will lose 67¢ of benefits which is the same as under present law. Except under this law, in contrast to present law, the recipient will also have to pay his social security tax (5 percent), all applicable state and federal income taxes as well. And, as his income rises, he will lose other kinds of assistance from the federal government—in-kind assistance such as medicaid, food stamps and public housing. So the fact is that by the time a person's income gets up in the high $3,000's, the tax on every dollar of earnings will be over a dollar, by the time you add up the loss of benefits and all the applicable taxes and loss of in-kind assistance. Obviously a system that contains this kind of disincentive to work will in the end not get the people off the welfare rolls and on to the work rolls which is Mr. Nixon's favorite rhetoric. What will happen is, at the end of five years time, the program will not have worked—and this is putting aside the fact that most welfare recipients are not able-bodied males in any case—and again the poor will be blamed.

There are a lot of people excluded from this program, individuals and childless couples are excluded. One thing that particularly hasn't been stressed enough is that the income for purposes of qualification will be adjudged over the previous nine months of earnings. Which means that all seasonal and migrant workers are excluded from this legislation because if they've been working for nine months and they now have zero income, the relevant income will be the average over the previous nine months.

Now all of these things are bad enough, and I would say are adequate reasons to oppose this legislation. But there is an additional element to it, an element of repression. And I use that word advisedly. An element of interference with basic civil liberties which is built into the entire structure of this bill, is built in in a complicated series of ways and has not been adequately publicized at all. Every recipient is thrown off this program every two years and must reapply. Every recipient must report his family income every three months and if the report is not accurate or not timely the person will be fined and the benefits will be reduced for a period of time or can be eliminated entirely from the program. Any person who fails to cooperate in the judgment of the Labor Department, who is deemed employable or deemed trainable and fails to register for work or training will be docked $800. In fact, the basic floor is really $1600, not $2400, for a family of four which makes it lower than all of the states, not merely lower than 44 of the states.

The elements of control are really quite fantastic. The people will be told where they can work, whether they will be trained, whether they're a drug addict and have to be forced into some kind of drug treatment program, whether they're only partially disabled and can be rehabilitated in the judgment of the bureaucrat.

There are all kinds of crimes which have been alluded to in other testimony. The first is that if a man crosses a state line to leave his family to the tender mercies of this wonderful program, he is subject to a year in jail or a $1000 fine.

Under the fraud provisions, and the House Ways and Means Committee tells the Administration to interpret these provisions very, very strictly, if money is converted from one intended beneficiary to another, that would be from one child to another, from one child to a parent, that's a federal crime punishable by one year in jail or a $1000 fine. The elements of control are really quite amazing.

The Ways and Means Committee proudly told us children would be given social security cards and there would be cross-registration among the Internal Revenue Service, Veterans Administration, Railroad Retirement Board and Social Security Administration so that we can find out everything about everyone of the people who come into this program. Senator, it's 1984 for the poor. Now how will that work?

The father leaves home—a man who is alleged to be the father of the child—the House report tells us that the first thing that happens is that the mother will be told as possibly a condition of her receiving aid that she must cooperate in locating that father.

That's how far this goes. And if the man who is said by the bureaucrats to be the father doesn't turn up, the result of the cross-registration on the computers is that, when he is 65 and he comes in and he applies for his social security, he will be told that before he gets any social security the thousands of dollars that were paid out to that woman way back there 30 years ago, he will have to pay back. I find that rather frightening.

The bill also takes us back—takes us away from rights that have already ben achieved under present law: rights of appeal, rights to counsel, and rights of prior hearing. This bill provides that the facts as determined by the Secretary in any administrative hearing will be conclusive if a recipient takes it to court. This is not the case under present law. This bill provides that the Secretary of HEW can determine who is an appropriate person to represent a recipient at a hearing. This is not the case under present law. This bill provides that if a recipient has been told to pay back benefits as a result of the hearing, benefits which he or she was allowed to keep while that hearing was pending, if those were erroneously paid then it is an overpayment and the recipient is going to have to pay them back. This is not the case under present law. It's not possible to qualify for this program by an affidavit and a spot check mechanism which is possible as a state option under the present law. So it takes us backwards in many, many ways.

Now, I've been describing the aspects of H.R. 1, of Title IV, that's been passed by the House. I think one thing that we want to concentrate on for the remaining moment or two is really the tactics of where we are now in the Senate. Senator Harris, with you and I it's "deja vu." We've been sitting here talking to each other since 1967 on these matters. And you've contributed a great deal over the years to trying to inform your fellow senators about the tactical consequences of this kind of legislation in the Senate.

Pending before the Senate are a series of amendments called the Ribicoff package, which admittedly do improve the bill in many respects, although basically by tinkering with language—changes that would be easy, even if the Senate passed them, to remove in Conference. What I want to emphasize is that the Ribicoff amendments, while I'm sure are not intended as frauds, are in fact a fraud. They constitute running interference for the Administration, because if the Senate passes those amendments they will be lost in Conference.

The Conference will be between your chairman, Senator Russell Long, and Chairman Wilbur Mills with the most senior members of the two committees. Any ameliorating amendments, any reforming amendments, that have been adopted by the Senate will be lost in the Conference.

There has been a conspiracy of silence among all of those who understand this and who are supporting the Ribicoff amendments and who are going around saying, "let us pass these amendments and you will get better legislation." The fact is we will not get better legislation. And if Senators are opposed to Title IV of H.R. 1, what they have to do is to oppose the Ribicoff amendments, they have to oppose Title IV and they have to oppose H.R. 1 itself.

A chance to reform the welfare system comes only once every ten or twenty years. If this legislation is passed we will not have another chance for another ten or twenty years. We will be told to wait until it's had a chance to work. A structure will have been imbedded in the law of the United States which is repressive, which is backward-looking, which will not work. We cannot have this happen. We have to let the country know, let all Senators know what the consequences of this bill are and what the consequences of the tactical situation are.

If you can defeat Title IV, if you can defeat the Ribicoff amendments, if you can defeat H.R. 1, you can then go ahead and do what should be done now and what can be done now. This is an election year. There's no way you can get away without passing increases in social security benefits. It's got to be done; it's an election year. The states want fiscal relief under the present welfare system. The governors will support that. You can go ahead and pass that apart from this legislation. We need your leadership, Mr. Chairman, Senator Pell and all the other members of the Senate, we need your leadership right now if we're going to stop this fraud from being enacted and give ourselves a chance to ever enact decent welfare reform.

Senator HARRIS. I want to get back to that in a moment. But I want to first ask Ann Marie and Bobby to say a word or two and then turn to Senator Pell who has to attend another hearing. Ann Marie, how old are you?—in what grade?

ANN MARIE CAVANAUGH. Twelve. I'm in sixth grade.

Senator HARRIS. How old are you Bobby?

Bobby CAVANAUGH. Thirteen.

Senator HARRIS. Are there many of the children that you know as friends whose families receive welfare assistance?

ANN MARIE CAVANAUGH. No.

Senator HARRIS. What about clothes? Do you and Bobby have the kind of clothes you want? Is that a problem?

BOBBY CAVANAUGH. Yes, it's a problem.

Senator PELL. I apologize for not staying right through, but I have an executive meeting going on. I wanted to be here for two purposes. One, to congratulate Senator Harris on holding this hearing because we hear very often from the articulate and the educated and the fortunate. But we do not hear often from the young and the black and the poor. And this is a government which is primarily run, I think for the interests of those who are not young, are not black, and are not poor. One of the reasons being that they don't always take advantage of the franchise of voting as much as they should to be a greater force in the community. In my own state of Rhode Island I congratulate many of the people there who fall in these categories who take advantage of the vote and do vote. You, Mrs. Cavanaugh, I am sure are registered.

Mrs. CAVANAUGH. Yes. And I ran a registration drive too.

Senator PELL. Exactly. I would hope that as many of your friends, of people who are in the same situation you are would do exactly the same thing. The opportunity to you and to your youngsters is very rare for us, and I think this is a wonderful idea. I would like to ask Bobby, how many pairs of shoes you've had in the past year.

BOBBY CAVANAUGH. Two and a pair of sneakers.

Senator PELL. And when will he grow out of them, within the year, won't he?

Mrs. CAVANAUGH. Depends on how much I can afford at the time to pay for them. Sometimes they last two weeks.

Senator PELL. I just wanted to welcome you down here and be here to hear you testify. Good luck to you. In our own state of Rhode Island, welfare has become a poor word. This is one of the problems—the politics of it. But the facts of it are, if you take off the welfare rolls the children and the mothers of pre-school children and the disabled—in other words look at the potential workers, of which there are very few—and then you look at the unemployment in our state—7.8 percent at last count—you realize that we have a problem that is of tremendous proportions.

Senator HARRIS. What is the welfare assistance payment in Rhode Island for a family the size of yours?

Mrs. CAVANAUGH. $289 a month. For a family of nine.

Senator HARRIS. Is there still some of that TDI coming in too?

Mrs. CAVANAUGH. No. That's welfare. When I was getting TDI I was getting $72 a week from TDI and the welfare was only giving us $2.10 every two weeks.

Senator HARRIS. What about the food stamp program, how does that work there?

Mrs. CAVANAUGH. With the size of the family I have now—which is eight because my daughter got married—I pay $61 and I get $98 worth of food stamps.

Senator HARRIS. That $61 comes out of that $289.

Mrs. CAVANAUGH. That comes out twice a month.

Senator HARRIS. And it will buy about a third more food than the amount of money it cost you. What kind of food can you buy for that amount of money? How do you make that last?

Mrs. CAVANAUGH. Well I make a lot of soups—and macaroni and things like that that we can use for two days—especially near the end of the two-week period. But I do try to get a lot of meats in for the kids. As much as I can stretch it.

Senator HARRIS. What about dentists and eye checks and so forth?

Mrs. CAVANAUGH. They get all free medical care.

Senator HARRIS. That's good. Peter, I was going to ask you to comment further on what you said awhile ago. I was very disappointed in Common Cause and the League of Women Voters and other well-meaning organizations and groups that supported H.R. 1 in the House on the basis that maybe we could fix it up in the Senate, because I thought that you ought not to start compromising that early in the game. If you're ever going to do anything, it seemed to me, you're going to have to start right at first. Now we've got a lot of people saying that if we can get passed something good here we ought to do it and then if it comes back from Conference in unacceptable form then we can kill it. That gets us back to this business that Senator Robert Kennedy and I and you and others were involved in, standing in the way of social security increases, which we would have done except for a parliamentary maneuver. I wish you'd comment on that, what are our chances of stopping it down the road if we didn't stop it now?

Mr. EDELMAN. Well, it's the same myth that the proponents of this kind of so-called welfare reform engaged in when the bill was in the House. They said, we'll fix it up in the Senate. We now know it can't be fixed up in the Senate because that will be lost in Conference. The fact is, you and I know that it's very, very difficult to defeat a Conference report. Maybe you can do it sometimes when you're talking about something like the SST, which has a nationally organized fight where all liberals are on the same side, where it's been publicized all over the country.

But the country doesn't understand that this is crumby legislation. Perhaps you can stand up and run a filibuster and if Russell Long who is a pretty clever parliamentary fellow doesn't beat you at that game it will last for a while. But as you say, they're going to come in and say you're holding up the benefits for the old folks. They"re going to come in and say that you're holding up the business of the Senate and it's election year and they have to get out and campaign. There will be incredible pressure on you to stop that. The fact is that I would sit here and predict that it will be difficult, if not impossible, to muster the votes to defeat the conference report once everything has been agreed upon. If it comes down to that I will be on your doorstep telling you to carry on the fight. It has to be done. But the point is that it is the most myopic kind of shortsightedness to sit now while there still is an opportunity to do something and to say let it go to Conference and come back and then we'll fix it up. That's wrong, it's silly and it's ultimately self-defeating and futile. The thing that must be done is defeat this legislation now in the Senate and then pick up the parts of it that are constructive and useful and enact them separately in both the House and the Senate and get them signed by the President. That's the only thing to do.

Let me say a word about the organizations. Common Cause and the League of Women Voters have begun to understand what a terrible mistake they have made—at least the League does and a minority of the board of Common Cause does. We tried very hard when the bill was in the House to get them to understand that that was the day of reckoning, the day that Title IV was passed in the House. I hope they remember it the next time this happens. But they've already done incalculable damage. On the other hand, I think we ought to say for the record that the position of the liberal community on this is not one-sided. The general myth that's abroad in the land is that everyone who is a great liberal supports this legislation of Mr. Nixon's—the League of Women Voters, Common Cause, the AFL–CIO, the *New York Times*, the *Washington Post*. But let's look at the other side of the list—the National Welfare Rights Organization; the Child Welfare League of America; the National Council of Churches; the Family Service Association of America; the Synagogue Council of America; a number of labor unions; Elizabeth Wickenden, Professor of Urban Studies at City University.

The fact is that the list on the other side, the list that takes exactly the position that I took today in my testimony, is equally as long and equally as distinguished.

Senator HARRIS. Thank you very much.

Mrs. CAVANAUGH. I would like to point out that there has not been a single organization of poor people—farm workers, domestic workers, or any group of poor people—that supports this legislation. The people who supposedly it is designed to help are unanimously united in their opposition to it, which I think is very essential.

Senator HARRIS. So the thing to do is kill this legislation, pass some fiscal relief for the states, and then work for some real welfare reform.

Mr. EDELMAN. I agree with that.

Senator HARRIS. Let me ask Ann Marie and Bobby one more question. Do you eat one meal at school? What does that lunch cost, do you know?

ANN MARIE CAVANAUGH. 40 cents.

Senator HARRIS. Do you always have the 40 cents?

ANN MARIE CAVANAUGH. We get free lunches.

Senator HARRIS. Do you? Good. Is there any difference in treatment, Mrs. Cavanaugh, for those who get free lunches? Different lines?

Mrs. CAVANAUGH. Ann Marie has come up with her own thing on that all the way from Rhode Island, and now let her tell you.

ANN MARIE CAVANAUGH. The people on Welfare have to have a yellow card and they go on the same line with the people with money and we have to give them a yellow card.

Senator HARRIS. So everyobdy knows. And you don't like that? Neither do I. Thank you all very much for being here.

I next want to call on Jonathan Kozol and with him is Linda Jordan who is 14. As many of you know quite well, Professor Jonathan Kozol is from Boston, Massachusetts. He is best known as the author of *Death at an Early Age* which describes the crippling and inadequate education offered to black ghetto children in the Boston schools. He has taught in the Boston public schools and is now actively involved in the free school movement, a movement dedicated to providing more meaningful and relevant educational opportunities to children. His newest book, *Free Schools*, has just recently been released. I've asked Professor Kozol particularly to focus on infant death rates at city hospitals.

STATEMENT OF JONATHAN KOZOL, EDUCATOR, BOSTON, MASS.

"Senator, this is hearing primarily for children. I'm speaking here, however, on behalf of children who cannot come here to testify today, or any other day, because they are not living. I'm speaking of children not in Mississippi, not in South Carolina, but in Boston and in New York, who have died in infancy as a direct consequence of inadequate and intolerable obstetric services in ghetto hospitals."

Every city has its third-rate hospital for those whom it considers to be third-rate children. In Boston it is known as Boston City. The situation in this hospital is now so serious that one can only wonder where two respected Senators have been, and why they have not been prepared to speak out on this issue. Where there is no documentation, no man is to blame. *Where there is documentation,* where there is overwhelming evidence, then silence can only be interpreted as acquiescence in the death of children.

Doctors at Boston City Hospital—BCH—have indicated, in signed statements, that patients on the danger-list are often left as long as 18 hours without nurses. 276 nurses walked out of this slum-hospital in less than one year.

The hospital was denied accreditation (by the Joint Commission on Accreditation of Hospitals) in January, 1970. Reasons given included the danger to contamination in obstetric-newborn areas.

Medical Records in the BCH—upon which doctors must rely in order to make critical decisions—currently have a backlog going all the way to 1969. Doctors estimate that over 4,500 records are either incomplete or non-existent. BCH sees approximately 1,000 out-patients in its clinics every day. *200 of those are seen without their medical record.* (Report of House Officers Association, Boston City Hospital, 818 Harrison Avenue, Boston.)

The Joint Commission which took away accreditation from the BCH put special emphasis on possible contamination of obstetric areas. In one of the most shocking statements signed and put forth by the doctors who take care of infants, the point was also made that chaos in the area of pediatric record-keeping is causing danger to the lives of children. Said one doctor, in explicit warning to poor people who have entrusted infants to his care: "We are having difficulty practicing good pediatrics."

The problem has now reached the critical point—one of which few members of the medical profession ever will freely speak—at which, in the signed statements of the House Officers of BCH, it has begun to cause *unnecessary mortality in patients.*

The absence of records, I might parenthetically suggest, is a very familiar phenomenon to anyone who has ever worked within a ghetto school. In medicine, of course, the stakes are infinitely higher. If the listener is in doubt, or if he should be dubious on this score, I urge him to drive over to his doctor's office and ask his doctor how he would like to make emergency-decisions in regard to a cardiovascular problem on a fourteen-year-old child with no medical history, no documents, tests, x-rays or records of previous emergencies available within his office or within the hospital in which he works. It might be well to ask him also how it might affect the death-rate among patients on the danger-list if he were forced to leave them for sixteen hours without nurses.

Abstractions oftentimes have little power to awaken proper rage. Let me be concrete and specific: Black and Puerto Rican infants born at the BCH have twice the risk of death within the first 4 weeks of life as children born in the Beth Israel or the Boston Lying-In—both middle-class white hospitals of Boston. (Figures provided by chief statistician, Lemuel Shattuck Hospital, Boston. See also, "Medicine in the Ghetto," edited by Dr. John C. Norman, Appleton publishers, 1969.)

This figure corresponds to the classic ratio between white infant-death and rates for ghetto children nationwide. Black children in the United States have between two and ten times the chance of dying in the first 12 months of life as white children. The national average is 20 infant-deaths per thousand. In white suburban neighborhoods: 12 to 15. In ghetto neighborhoods: not often lower than 35 or 40; sometimes as high as 60.

In the event that those from Boston, New York or Chicago would like to think that figures of this kind apply primarily to Mississippi, Dr. H. Jack Geiger of Tufts University points out that there are a number of Northern ghetto census-tracts in which the infant death-rate now exceeds 100 children dead for every 1,000 live births. We are speaking here of the dimensions of the Biblical plague. It is difficult to know what words like "equal opportunity" can possibly imply for children who do not even have an equal chance to see the fifth week of their lives.

I have been speaking, up to now, primarily of infant-death. Infant-malformation, however, is also catastrophically high among the black and poor in Boston; so high, indeed, that the men who know the figures are afraid to speak of them for fear of their incendiary implications among those whose children suffer, as a direct consequence. I can assure the Senators that they would not sleep well if they were obliged to look into these documents for very long.

The danger of lead based paint poisoning is now coming to the attention of parents. The plaster in these old tenement buildings is covered with sweet-tasting chips of lead paint which the poor kids eat or chew as it flakes off the wall. Lead paint poisons the brain cells of young children. Infants die, are paralyzed, undergo convulsions, and sometimes grow blind if they chew it over long periods of time. Forces of the law do not compel a landlord to replace or cover over the sweet-tasting crust of paint that paralyzes kids. The law does allow a landlord to throw out a welfare mother if that mother misses one rent payment by as much as 15 days. So there is our equal justice before law. On the face of these conditions it's hard not to ask a question about the curious silence on the part of Boston's prestige medical schools. Several doctors have pointed out in recent months that the Harvard Medical School, one of the most distinguished in the world, derives ironical advantage from this system by virtue of the fact that it obtains through two-class medicine a wide array of devastating cases—cases and conditions a good deal more advanced and therefore medically more valuable, more interesting than doctors could ever find in middle class, white hospitals.

I have heard doctors at Harvard Medical School say to me, "We're getting some good material over there—black kids are good material." Boston has a worldwide reputation as a medical research center, but in terms of basic health care to poor children it is probably one of the most racist cities in the western world. In the opinion of several of the most sober, conservative and respected doctors that I know, black children would get far better pediatric care in either Denmark or Peking than they now get in Boston.

I know one child, 18 years old, she falls down in the middle of the city, she's an epileptic. In the neurological capital of the United States there is not treatment for this child. One night she comes downstairs to the coatroom underneath the church stairs which is the office of the freedom school where I'm working. She asks me please if I would close the door, please would I close the door because she is about to have an epileptic seizure and she doesn't want to bother the other children in the classes. I watch her as she undergoes three seizures in a row. When she can stand up we drive her to Boston City Hospital. There is a three hour wait before she gets to see the intern. He comes out finally and he gives her an injection and some tranquilizers to sedate her and writes out a prescription for phenobarbital. He looks at me then and shakes his head—one white man to another—"It's a goddamn shame," he says, "nobody needs to have an epileptic seizure in this day and age, nobody except a poor black nigger."

The final word on this belongs to two doctors, one of them a young doctor who happens to be black and who also happens to be a doctor on the Harvard staff, expressed his view to me in these words: "If my own daughter were treated in the way I see children treated in this place I'd tear the hospital apart." The other doctor who happens to be white and a lot older, one of the most respected physicians in the country, put it in different words. I sat with this doctor one night during the past winter. We were talking about some of the stories the parents and kids are telling me all the time.

Like many older people he tried to put it off—"Not in my city, somewhere else." Finally he sighed and said: "Who can deny it, (this was in reference to the decline in health care at BCH) the total collapse of patient services at ghetto hospitals follows the classic lines of change in racial character. Boston City was once a world renown, even brilliant, medical institution. Those were the days when it served mostly those of Yankee, Irish, Jewish or Italian origin. In the last 20 years the ethnic character has shifted. There are less Irish, few Italians, and almost no Jews, it has become a hospital at least for the 'untouchables.' And it has become third rate. I hate to say it because I love and always respected Boston City. I had my training there more than three decades back. I did my residence there; I supervised the interns on the Harvard service; I led the medical students on grand rounds. I cannot speak of Boston City without a sense of sadness. There is still some excellent research going on. There are still large numbers of distinguished men and women working there, but BCH is a ghetto dumping ground today. If racism in medicine means anything at all in 1972, then it means Boston City Hospital." Those words came from a very conservative gentleman.

As I said earlier, children can't testify on matters of this kind. The victim of the infant death rate in a ghetto hospital like Boston City cannot come to Washington to make his protest. I've taken license, therefore, of speaking on behalf of those whose lives have been snuffed out or maimed in child birth. I'd like to hope that some of the senators, perhaps Senator Harris, might be persuaded to come up to Boston sometime to take testimony firsthand in my neighborhood. The back door of the emergency ward of Boston City Hospital might be an excellent location. The victims of this tragedy cannot testify, but you might well tape record the crying of their mothers. Thank you.

Senator HARRIS. Thank you very much, Mr. Kozol. I think there's nothing really to add or to ask, except to say that you've demonstrated once again that we systematically destroy millions of children in this country primarily because of their lack of income. I don't think people are going to stand for this kind of maldistribution of the good things in our society which is unparalleled in the modern world among rich, industrial countries, and this sort of exploitation of people, if it continues very much longer. I think your testimony has been a very eloquent and outrageous statement of facts.

Mr. KOZOL. Senator Harris, I would like to introduce one of my students from Boston, a black student. I would briefly like to make one point, or ask of you, if possible, intervention in one area this student cannot speak about. The most obvious educational school atrocities in Boston have to do with black kids. These have been documented and will be documented again in a couple of minutes. But, there's another problem which isn't talked about, a great deal, this deals with the Spanish-speaking children.

Senator HARRIS. I was going to ask you to tell us about the things we discussed last night. What is the problem with Puerto Rican kids in Boston being kept out of the schools?

Mr. KOZOL. There are remarkable, almost unbelievable, statistics, according to a report that was put out last year by Beacon Press done by a lot of very respected citizens in our city. Between one-half and two-thirds of the Spanish-speaking kids just aren't in school at all. They are Puerto Rican and some Cuban and South American children. There are approximately 12,000 school age Puerto Ricans in Boston. Between 6,000 and 8,000 of these children are not in school. The most conservative statistics, even those which are obviously those of the Boston school system, indicate that there are at least as many Spanish-speaking kids out of school as those who are in. For those who do enter, 90 percent drop out by 9th grade. There are approximately, according to a Puerto Rican leader, 3,000 kids of high school level in Boston. But in all the high schools in Boston there are only 90 Puerto Rican children enrolled. With my arithmetic it looks like 2,910 Puerto Rican children are missing in action. A suggestion that I would like to make, and one which some of the Puerto Rican and black leaders in Boston have been speaking about recently, is this: we are always told we should work within the system, and this is a way of working within the system, courts are part of the system, people bring court suits for lots of things in this country. We're wondering why a child who has been kept out of school couldn't bring suit for the money which wasn't spent on him. A year at school in the United States costs $500 to $1000 for every child. In Boston I think it's about $1000.

A child who has been kept out of school for 8 or 10 years, seems to me to have $8,000 to $10,000 coming to him. A year ago a black man named Bill Owens decided he was going to do just this. He took his kids out of public school where they had just been rotting away and put them in one of the parent-operated free schools, one of the street academies the black parents had started, and then he demanded that the city pay him tuition for that school because they were rotting in the school they previously attended. I thought he had a very strong case. I though it was very eloquent and very poignant. But we didn't see any of those good lawyers in the city rushing forward to his defense. Senator, I was thinking, should there be a time in the next few years when by any chance, oversight of the voters or your own decision, you're not in public office, that you would like to come to Boston and help us make a brief. It's admittedly an unconventional idea to sue a city for the years a child has been denied, but rich men are always suing for broken bones and bent Cadillac fenders. I don't see why a kid couldn't sue his own society for broken dreams and dented hopes and ruined expectations. We'd like to have a good lawyer.

Senator HARRIS. Well said. Thank you very much. I want to call now on Linda Jordan. You live in Boston don't you? And you're in the 9th grade? Do you have a beginning statement you want to make?

STATEMENT OF MISS LINDA JORDAN, STUDENT, BOSTON, MASS.

Not really. I just want to say my name and how old I am. I am 14 years old. I am presently in the Metco program and have been for the last four and a half years. That's a program that is basically voluntary with students and suburban communities like Newton, Brookline, Wellesley. Also other communities like that out in the suburbs outside Boston. They take black students. I can't vouch for statistics to say that the Metco program is wholly black, but from what I have seen, I think it is predominately black. They go from the ghetto out to suburbia to get a better education.

Senator HARRIS. Where do you go to school?

LINDA JORDAN. I go to school at Warren Junior High in West Newton.

Senator HARRIS. How does that work out do you think, Linda?

LINDA JORDAN. I've been out there ever since the fifth grade. In elementary school I went to Davis School in Newton. To make comparisons with the schools in Boston, I went to William Lloyd Garrison Elementary School. That's the school I left to go to Davis. To compare between the two elementary schools: I never even saw a library while I was in the Boston school. I never went to the library because I didn't have, I guess you could say, the inspiration; no one told us about books or anything. They didn't tell us, why don't you go to the library and look up this person or see that thing. We had no kind of black history or black studies in our school. To compare regular curriculum studies like math or science or different things like that—I don't even think we had science. We had a little bit of art, but we couldn't express ourselves. We had to be told what to draw. Everything was in a routine way. We did nothing out of the ordinary. In math I was getting A's in Boston. When I went out to Newton I dropped down from an A to a C. That shows that although we were doing the same work the teachers in Boston didn't have enough time to spend with us to find out exactly what we were doing. Say I got a D in Newton, the teacher would come to me and find out why I was getting a D. He looks at it that it was not my fault that I got a D, but that it was his fault that he did not take enough time to explain what was going on with a certain mathematical equation. In Boston the teacher just couldn't care less. It just goes into a vicious circle—you're in school in Boston and you don't have any chance of getting into college with what they teach you there. Then you go out to Newton and what they teach you out there in suburban schools while you're sitting next to a white child in a predominantly white school, you get a better education than you would ever hope to in Boston.

Senator HARRIS. How did you manage to get into that program, Linda?

LINDA JORDAN. My parents signed me up into it. The Metco program started in 1966. I went in 1967. The communities then were Newton and Brookline. They have about 265 kids in Newton in elementary and junior high schools. They started out with one bus and now they're up to 19 buses. A couple of kids have already graduated from high school in Newton. My parents signed me up into that program hoping that I would do a lot better than I had been in the Boston school. Because they could obviously see that I wasn't learning anything.

Senator HARRIS. How many other communities are involved in the program?

LINDA JORDAN. There are more than 30 communities. It's purely voluntary—by the students and by the communities.

Senator HARRIS. What about the differences in buildings or books and class materials?

LINDA JORDAN. The buildings in Boston are hopeless. In Boston we have two new elementary schools being built. There is a campus high school that is supposed to be built, but that's on the way. In Newton they're building a new Newton North High School and there is a new South High School. Newton North ought to be finished by the time I get there in September. The elementary school I went to in Boston had no kind of gym, no library, we didn't change from teacher to teacher, we only had one teacher throughout the day who taught us all of our subjects. When I came out to Newton, I never knew there was anything such as gym. What we called gym was playing 5 or 10 minutes of hop-scotch. Then we went back in. In Newton we had gymnastics, soccer, baseball, all different things. I was really amazed with the library. I guess you could call it a kind of hunger. The first year I was there I read about every book that was in the library. And it was a fairly good sized library. It was the only library I had been to in my life. From that time on I started going to the library regularly, because I had a hunger for knowledge. I think most of the kids in Boston have this kind of hunger too, but no one there will tell them to go to the library to see what you can find to read or write a book report on what you find. There was no one there to tell us that. The teachers don't even care let alone take any kind of interest in anything they do there. In comparison, the Boston school is just a dump where they just send kids to say that they are in school.

Senator HARRIS. Is there a difference in class size?

LINDA JORDAN. When I went to elementary school, I was taught at that time by Mr. Kozol in the 5th grade; our room was spread out, we had two rooms that joined together. One was a reading room and the other was a room for math and other things. In the 5th grade we focused mainly on math and reading. We had a big room set up with books all over the place and any time you wanted to you could just come in and sit on the rug and read or converse with the teacher or talk to the students. Everything was in a free atmosphere. In Boston, the room is set up with four desks across and nine desks down. Everybody sat in rows in his assigned seat. The teacher stood up front and said, "class we're going to have math so open up your books." In the fifth grade it didn't go like that. The teacher came around and helped us individually. Everybody was doing things at their own pace. In this way they were getting help. The ones who were ahead could go on at their pace and the ones who were a little slower got help from the teacher to help them catch up.

Senator HARRIS. What's going to happen to those kids who are not lucky enough to go to a suburban school? What sort of future do you think they're going to have?

LINDA JORDAN. I really don't know. If they're lucky enough to pass the college boards test I guess they can get into college and do whatever they want to. The argument has come up that black kids just can't learn. That is not true. Teachers say that they don't want to teach them because they always make trouble or there is always a certain amount of trouble in the schools and you just can't get along with them, they beat you up if you say something to reprimand them. That's not true. They say that no matter what you do they can't learn and they can't be taught. Any kid is not an angel; they're bound to get in a little trouble. But some kids just have problems and they have to be helped. This isn't noticed at all in these schools. If you mess up once you're out or you're just not cared about. Some kids can skip school for weeks and a truant officer will come to their house but nothing is done. In Newton, if you miss school for three days they call your house to find out what is wrong, what is the problem. It always boils down to in Boston they just don't care. This is a form of racism, in a way, because the ghetto is a part of racism. They say that black people will never be ready, and why they'll never be ready is because they don't have the education to get ready. When you don't have the education to get ready it only falls back on one people, and that's white people because from the time we were brought here in slavery we've always been separated and tried to be turned against each other—even with the house slave and the field slave, they were turned against each other because the white men made the house slaves feel better than the field slaves. White people feel that if we're always separated and we don't have the education to move any place

then there'll be no revolution, not by guns but by change. And when we do have this revolution by change in the school system, in the ghetto, that's when we'll be able to say we'll be able to get someplace. We'll be able to send kids to school and know they'll be able to learn something. Maybe we'll be able to have this thing by separate but equal, and it will really be true. These are the things that have to come out in the wash, and they're not coming out in the wash. That's why I'm here to say as much as I can about what's really going on. I'm not going to try to hide this from you or to say what other people tell me to say just so it won't give them a bad impression. I'm going to tell it like it is because this is the way I feel.

Senator HARRIS. Linda, you're going to make it because you've got what it takes. Because of you I think others may get a chance too. Thank you very much.

## CLASSIFIED INFORMATION IN THE SENATE

Mr. GOLDWATER. Mr. President, my colleague from Alaska, Senator GRAVEL, has a now well-known penchant for presenting classified information to the Senate. Earlier this week he again favored us—this time with excerpts from the so-called NSSM–1 memorandum compiled by the National Security Council. The Senator chose to place emphasis on the part of that memorandum which indicated that the mining of the harbor at Haiphong would be an ineffective military measure. The inference which he would have us make is that the administration itself has said, in the memorandum, that the mining of the harbor would be ineffective, yet now, inexplicably, the administration is mining the harbor. That inference would be altogether false.

In the first place, the memorandum was one of many written to the President. In the second place, the memorandum contained divergent views. In fact, it did not reach any overall conclusions—more accurately, it merely postulated possibilities. For these reasons alone, Senator GRAVEL's implications should be disregarded.

But even if the memorandum had reached that conclusion, those implications would be no more valid—the memorandum was compiled almost 4 years ago when circumstances in Vietnam were far different from those we see today. For example, at the beginning of 1969, we had half a million American troops in Vietnam, placed there by a Democratic administration. But from a military standpoint, in regard to the mining of the harbor, the most significant differences are: First, that in 1969 the supplies arriving through the harbor were not the modern and sophisticated artillery, antiaircraft, armor, and other weapons on which the current offensive so heavily depends; second, that the North Vietnamese did not have their entire army committed to a massive invasion of South Vietnam; third, that the North Vietnamese had not committed themselves to the kind of conventional warfare which they have been waging since they launched their invasion 6 weeks ago; and fourth, that in 1969 the North Vietnamese had direct access to the southern half of South Vietnam through use of the Cambodian port of Sihanoukville, whereas today the supplies needed to sustain their effort in that half must come from the North.

For Senator GRAVEL to suggest that one of a number of postulates set forth 3 years ago under wholly different conditions proves that present mining of the Haiphong Harbor will be ineffective would be, in my opinion, misleading, ludicrous, and dangerously deceptive.

Furthermore, Senator GRAVEL and other critics of the administration seem to want to have it both ways. But simple logic dictates otherwise: either the mining of the harbor will be effective and will bring an earlier end to the war, or it will not be effective and, therefore, there is little reason for the North Vietnamese, the Chinese, the Russians, and Senator GRAVEL to be so upset about it.

It is time to stop this nonsense. It is time for us to unite behind the President's effort to bring an honorable end to this war. It is time for his critics to acknowledge that the President has set forth most acceptable peace proposals to the North Vietnamese. If they do not, it will simply bolster the view of many that these critics will not be satisfied until they have seen North Vietnam conquer and subjugate our allies to their south.

## THE SUN LOOKS AT INFLATION

Mr. PROXMIRE. Mr. President, the Sun, of Baltimore, was kind enough to publish a letter from me the other day and to comment on it editorially.

Mr. President, I ask unanimous consent that the letter and the editorial be reprinted in the RECORD.

There being no objection, the article was ordered to be printed in the RECORD, as follows:

[From the Baltimore Sun, May 6, 1972]

A LETTER FROM SENATOR PROXMIRE

Elsewhere on this page Senator William Proxmire responds to recent comment here about his views on inflation and its cure. We are happy to see that the distance between his position and ours is much narrower than we had supposed. Very properly he asks why prices continue to rise when there is high unemployment of people and underemployment of plant and equipment. Because, he says, "a few large and powerful unions and a few large and dominant companies have a super market power, that enables them to shove both wages and prices up, when market forces should bring them down." The idea here is the same as ours when we said the cure was "to get government spending into balance with public revenues and wage-prices into gear with productivity." The Senator does not stress deficit spending by government as the original mother of inflation, but doubtless agrees with us that it is; when it comes to the big unions and big corporations which respond to the demand-pull inflation of deficit spending by the cost-push inflation of managed pricing, he and we are at one. Our earlier comment went on to say, however, that while the structural reforms for which Mr. Proxmire speaks were "economically imperative," they were "politically impossible." We had in mind here mostly the zero progress to date in curbing big-union power. The outlook for business control is not so bleak—there are, after all, anti-monopoly laws applied day in and day out to business—which are explicitly withheld from trade unions.

PROXMIRE ON INFLATION

SIR: This is in response to your lead editorial of Tuesday, May 2, entitled, "A Point But Not a Remedy."

In the editorial you state that I have a point that anti-inflation isn't working very well. But my remedy is to shuck the whole wage-price program and "learn to live with inflation."

I absolutely, categorically and completely deny that "to learn to live with inflation" is any part of the Proxmire remedy. I recognize that inflation is a serious and tragic economic problem, second only to unemployment.

Certainly we must use the most effective economic policy actions we can to stop it.

I did say that we should get rid of most—but certainly not all of our present anti-inflation program.

It isn't working—as any consumer can tell you. The administration has started within the past few days to move in the right direction by exempting small business.

They should go farther. They should recognize that the kind of inflation we have now is not the kind that we had in World War II when there were serious shortages of manpower and goods.

Now we not only have more than five million persons out of work, we are operating at a slack 75 per cent of capacity.

Why do prices continue to rise under these circumstances? The reason: because a few large and powerful unions and a few large and dominant companies have a super market power, that enables them to shove both wages and prices up, when market forces should bring them down.

The solution: zero in on the big unions and the big companies. Let the rest of the economy that is still subject to the pressures of competition operate freely. This would permit the present inadequate enforcement machinery to concentrate where it should.

This course is not likely to be popular even with consumers unless they take the time to think it through; and it certainly will be opposed hot and heavy by big labor and big business.

But it makes sense and it cannot be characterized as "learning to live with inflation." . . .

WILLIAM PROXMIRE,
*United States Senator.*

Washington.

## JUDGE THOMAS B. FINAN

Mr. MATHIAS. Mr. President, when a man has lived long enough to place an accurate value on the various aspects of life, he knows how to appreciate friendship. When he has additionally been educated in the hard school of politics he knows that friends are the most valued product of a life spent in seeking and fulfilling the trust of others. And when a friend is lost, the loss is felt accordingly.

Tom Finan's death has dealt that kind of blow to me and to thousands of other Marylanders. He was a man who did not let his party inhibit his friendships, nor his friendships affect his partisan loyalty. He achieved a right balance in his life, and never let politics or professional competition subordinate his constant and endearing interest in his family, of whom he often spoke. He took particular pride and pleasure in the education and progress of his sons, to whom he has left the legacy of a fine example.

Although he did not grasp the leadership of the executive branch of State government, he was clearly qualified and destined to preside over the judicial

branch. Death may have prevented the formality of his elevation to the chief judgeship, but it cannot affect the primacy he attained in the regard of his brethren of the bench and bar and his wide circle of admirers and supporters.

Marylanders who knew him little, or not at all, were moved by the untimely death of Judge Thomas B. Finan of the Maryland Court of Appeals. His loss deprives our judicial system of a most distinguished legal mind and leaves his many friends saddened and diminished by his departure.

The Baltimore Sun of May 9 contains an editorial which sets forth succinctly Judge Finan's contribution to all of us. I ask unanimous consent that it be printed in the RECORD.

There being no objection, the editorial was ordered to be printed in the RECORD, as follows:

[From the Baltimore Sun, May 9, 1972]

THOMAS B. FINAN

Judge Thomas B. Finan's untimely death at 57 leaves a gaping hole on Maryland's Court of Appeals. He was a kind and friendly jurist whose impish smile masked a strong, even-handed approach to his work. In his demanding job, Judge Finan reviewed numerous cases and, like the other judges of the court, produced about 50 opinions annually. It was not surprising that death caught him at his desk in Cumberland reviewing briefs during the current recess.

A native Western Marylander, Tom Finan stepped upon Maryland's political stage in 1959 as Governor Millard Tawes's secretary of state. Two years later the Governor named him Maryland attorney general which, during the turbulent early 1960's, was one of the most sensitive posts in state government. Mr. Finan interpreted laws dealing with racial relations, reapportionment, school prayers and the rapidly changing police powers over criminal suspects. Oftimes he dutifully went to court to argue the state's position. Always he presented his case with justice, understanding and aplomb, even when he lost.

In 1966 he ran for Governor in the Democratic primary. Party dissension worked against him. He managed in defeat, however, to retain his grace, and it wasn't surprising that he was named to the Court of Appeals. He was considered a natural successor to the chief judgeship upon the retirement of Hall Hammond, May 18.

The court now has two vacancies instead of one. For Governor Mandel, the job of replacing Judges Hammond and Finan will be difficult indeed.

## PLIGHT OF MINORITY POPULATIONS IN BANGLADESH AND PAKISTAN

Mr. HARRIS. Mr. President, I ask unanimous consent to have printed in the RECORD two New York Times articles published on May 8 regarding the plight of minority populations in Bangladesh and Pakistan.

There being no objection, the articles were ordered to be printed in the RECORD, as follows:

[From the New York Times, May 8, 1972]

BHUTTO BARS TRIALS IN PAKISTAN OF BENGALIS HELD FOR SABOTAGE

RAWALPINDI, PAKISTAN, May 7.—President Tulfikar Ali Bhutto ruled out tonight holding trials in West Pakistan of Bengalis accused of sabotage during the December war. Such trials had been suggested as a possible counter-move to reep Sheik Mujibur Rahman, the Prime Minister of Bangladesh, was holding war crimes trials there of captured West Pakistani soldiers and civil servants.

President Bhutto also reiterated that he would not recognize Bangladesh before holding talks with Sheik Mujib, who has insisted that he will not meet President Bhutto until Pakistan grants that recognition.

Mr. Bhutto also said that Pakistan would not agree with India to disarm. But he suggested that the extent of post-war rearming depended on Indian "ambitions"—presumably to be appraised when he meets Prime Minister Indira Gandhi.

President Bhutto made his statements at a press conference he called to announce a forthcoming trip to visit Middle Eastern and African Moslem countries that supported Pakistan during the war; to say that no "secret agreement" was made two weeks ago at preliminary talks with India, and to proclaim that, as a result of a power-sharing agreement with Opposition parties in Baluchistan and the Northwest Frontier Provinces, "the disintegration of what remains of Pakistan is now impossible."

Mr. Bhutto said that his meeting with Mrs. Gandhi would take place after his Middle East trip. He is scheduled to leave Pakistan on May 29 and return on June 10.

Mr. Bhutto said that his government had evidence of Bengali sabotage during the war, but when asked if the Bengalis would be brought to trial, he said "no, never—out of the question."

"There have been certain things done by individuals which would invite trials, but I rejected it," he said. "They have taken secret documents. We have caught them redhanded, but I have ordered no action."

There are several hundred thousand Bengalis in West Pakistan, including 24,000 soldiers and 12,000 civil servants, according to the Pakistani Government.

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[From the New York Times, May 8, 1972]

DACCA CRITICIZED ON REFUGEE CARE—SUPPLIES AT "DANGER POINT," RED CROSS AIDE SAYS

(By Robert Trumbull)

DACCA, BANGLADESH, May 7.—Officials of the International Committee of the Red Cross here have severely criticized the handling of tens of thousands of non-Bengali refugees by Bangladesh authorities.

Laurent Marti, Swiss head of the International Red Cross mission in Dacca, leaves for the organization headquarters in Geneva today to report on conditions in the crowded areas of makeshift huts and ragged tents where an estimated 200,000 members of Moslem minority groups live in hunger, fear and squalor.

The Bangladesh Red Cross, which took over responsibility for the camps from the International Red Cross on April 18, has allowed the supplies of food and medicines in the camps to fall to the "danger point," an official of the international organization said. The official, who declined to be named, described the situation in the camps as "wholly unacceptable."

He said that the average individual food ration of 500 calories a day provided for the camps by the International Red Cross had dropped to 100 calories daily for the last 12 days.

The official said that the International Red Cross headquarters in Geneva would be asked to bring pressure on the Bangladesh Government to provide the "vital minimum" of food and medicine for the refugees.

"Otherwise they will die," he declared, adding that health conditions in the two largest camps, in the Dacca suburbs of Mohammadpur and Mirpur, had become "very dangerous."

The refugees are mainly from the 800,000-strong Bihari Moslem colony, which has been accused of collaborating with the Pakistani forces in the war between Pakistan and India last December, in which this former Pakistani province became an independent republic.

Following the withdrawal of Indian forces from most of Bangladesh after Pakistan's surrender, many Biharis—some say thousands—were the victims of reprisal killings by Bengalis.

Homeless, many gathered in camps for mutual protection.

Sheik Mujibur Rahman, the Prime Minister, has promised safety to Biharis who wish to be "good citizens" of Bangladesh, and many have returned to their former jobs, but those intimate with conditions in the camps say that many Biharis are afraid to leave the camps and want to go to Pakistan.

Bengalis, including the Prime Minister, openly show irritation at the concern often exhibited by foreigners over the condition of the refugees. They insist that many Bengalis displaced by the conflict with Pakistan are in even worse condition, if less visible in this crowded city of 1.5 million than the Biharis concentrated mainly in Mohammadpur and Mirpur.

## TO WHAT END? (PART II)

Mr. HART. Mr. President, following President Nixon's announcement last month that the United States was escalating bombing attacks in Vietnam, I asked:

What end justifies the terrible costs which inevitably result from massive bombing?

In asking that question, I had in mind not only the terrible toll in human lives, but also the terrible toll the use of bombs and other explosives extracts from the land.

There can be no debate about the extensive use of explosives in Vietnam.

Since 1965, U.S. forces have exploded the equivalent of 142 pounds for every acre in Indochina and 584 pounds for every person in Indochina.

Profs. Arthur H. Westing and E. W. Pfeiffer made three tours of war zones in Vietnam in an attempt to assess the effects of such wholesale use of explosive.

Their dismaying findings are reported in an article entitled "The Cratering of Indochina," published in the May edition of Scientific American.

I ask unanimous consent that the article be printed in the RECORD.

There being no objection, the article was ordered to be printed in the RECORD, as follows:

THE CRATERING OF INDOCHINA

(By Arthur H. Westing and E. W. Pfeiffer)

The unprecedented use of herbicides on a massive scale as an instrument of war in Vietnam has prompted several studies of the probable long-term effects of these chemical agents on the land of Indochina. Much less attention has been paid to the effects of the tearing up of the land by bombing and shelling. Yet the released tonnage statistics alone suggest that these effects must be sizable. In the seven-year period from 1965 to 1971 the area of Indochina, a region slightly larger than Texas, was bombarded by a tonnage of munitions amounting to approximately twice the total used by the U.S. in all the theaters of World War II.

During three tours of war zones of Indochina to assess damage done to the environment by herbicides, we became increasingly conscious of the ubiquitous scarring of the landscape by bomb and shell craters. From the air some areas in Vietnam looked like photographs of the moon. How would this cratering of the land affect life and the ecol-

ogy in Indochina when its people attempted to pick up normal living after the war? It seemed that the physical alteration of the terrain by bombing might have created long-range problems fully as serious as those produced by the defoliation campaign (which had attacked more than five million acres of forest and cropland in Vietnam). In order to initiate investigation of the crater problems, the two of us went to Vietnam for a preliminary study in behalf of the Scientists' Institute for Public Information in August, 1971. From the U.S. Department of Defense we collected the limited information that was available to the public about the expenditures of munitions in Indochina. Then in the field we surveyed bombed areas on the ground and from the air (in helicopters) and interviewed many people, including farmers, lumbermen and other persons who had observed various effects of the bombing on the land, the economy and various occupations.

In the seven years between 1965 and 1971 the U.S. military forces exploded 26 billion pounds (13 million tons) of munitions in Indochina, half from the air and half from weapons on the ground. This staggering weight of ordnance amounts to the energy of 450 Hiroshima nuclear bombs. For the area and people of Indochina as a whole it represents an average of 142 pounds of explosive per acre of land and 584 pounds per person. It means that over the seven-year period the average rate of detonation was 118 pounds per second. These average figures, however, give no indication of the actual concentration; most of the bombardment was concentrated in time (within the years from 1967 on) and in area. Of the 26 billion pounds, 21 billion were exploded within South Vietnam, one billion in North Vietnam and 2.6 billion in southern Laos. The bombardment in South Vietnam represented an overall average of 497 pounds per acre and 1,215 pounds per person; the major part, however, was focused on two regions; the five northern provinces and the region around Saigon.

Craters pock every area of South Vietnam: forests, swamps, fields, paddies, roadsides. Certain areas, notably the "free fire," or "specified strike," zones, show severe cratering. We personally observed large areas that had been subjected to intensive transformation of the landscape in Tay Ninh, Long Khanh, Gia Dinh, Hau Nghia and Binh Duong provinces around Saigon and Quang Ngai, Quang Tin and Quang Nam provinces of the northern part of the country. And of course the concentration of craters is particularly marked in areas such as the demilitarized zone (DMZ) between North Vietnam and South Vietnam and the supply trails in southern Laos.

We were able to visit on foot an area in the Mekong Delta that had been until fairly recently a free-fire zone. The area was near the hamlet of Hoi Son about 30 miles south of My Tho. Farmers were being resettled here on their previously fought-over land because senior officials considered the region fairly secure. (The degree of security became evident during our stay when U.S. aircraft were observed rocketing and strafing only a few miles away.) Several families that had left the area a decade earlier because of fighting were interviewed, and they took us to three craters that they said had been made in 1967. The craters had probably been produced by 500-pound bombs dropped by fighter-bombers. Each crater was about 30 feet in diameter, filled with water, and at the time of our visit was about five feet deep in the center. The entire immediate area had been a rice paddy, but during the years when no cultivation had occurred, the rice had been replaced by a very tall reed, genus *Phragmites*, which surrounded the crater at a distance of 10 to 20 feet. Growing from the rim of the craters and into the reeds was a species of relatively short grass, *Brachiaria*, and a taller grass, *Scirpus*. The farmers were growing seed rice near the craters and were plowing under the reeds and grasses in preparation for planting rice. It was obvious that they could not use the cratered areas for rice cultivation because the water was much too deep. The only apparent solution was to bring in soil from elsewhere, but this was obviously not practical.

We also observed at close hand many craters on the flat terrace lands northwest of Saigon that had previously supported an evergreen hardwood forest. In this area the craters generally contain no water during the dry season, so that their natural history is considerably different from the history of the craters of the Delta region that are permanently filled with water. The craters were very numerous in this area; there was at least one every 100 feet. Each crater was 20 to 40 feet across and five to 20 feet deep. There were many generations of craters from different air strikes. The most recent ones were bare of vegetation but contained some rainwater. (We observed these craters in the wet season.) In the older craters a few sprigs of grass, probably *Imperata*, were sprouting in the center. As the craters age grass grows radially, eventually covering the bottom to meet vines trailing down from the peripheral vegetation. There is some filling of old craters with soil washed down from the sides, but this is limited because old craters almost completely covered with grass were still five to 10 feet deep. They thus became permanent features of the landscape.

From the data available to us on the quantity of munitions expended we calculated tentative estimates of the total area affected by cratering and other damage to the land. For these estimates we had to make some very free and general assumptions. For example, we assume that about half (by weight) of the total amount of munitions employed in Indochina consisted of bombs, shells and other missiles that would produce craters. We assume further that on the average each of the crater-producing missiles was equivalent to a 500- pound bomb and formed a crater 30 feet in diameter and 15 feet deep, displacing 131 cubic yards of earth. (A large proportion of the cratering has been produced by B–52 bomber raids; each of these big planes typically carries 108 500-pound bombs.) We also estimate that the fragments from each crater-producing missile were spread over an area of 1.25 acres.

On the basis of these assumptions (some of which are supported by actual measurements) we estimate that the number of craters produced in Indochina by the bombardments from 1965 to 1971 totaled some 26 million, covering a total area of 423,000 acres and representing a total displacement of about 3.4 billion cubic yards of earth. The area of missile-fragment spread totals 32.6 million acres, if we disregard overlap. Again we note that South Vietnam has borne the brunt of this damage. In the period mentioned (through 1971) South Vietnam is estimated to have received about 21 million craters, covering all together about 345,000 acres, and to have had millions of acres contaminated by missile fragments, even allowing for overlap. The total area of the country is 42.8 million acres.

Let us now examine some specific effects, for the present and for the future, of this massive application of "landscape management" by high explosives. There is evidence from previous wars that the effects will be long-lasting. A decade after the end of World War II the craters of heavily shelled areas on Okinawa were still barren of vegetation and reddened by rusting shell fragments. On Eniwetok craters were clearly in evidence two decades after the war. Four decades after World War I vegetation in the Negev desert of Israel outlined the craters from that war, and even in France's Verdun area many of the World War I craters are still clearly visible and in some cases to this day are devoid of vegetation.

To begin with, we can see that the displacement and scattering of soil and subsoil from the craters in Indochina have given rise to harmful physical consequences. (Over the seven years the displacement of soil by bombardment in Indochina proceeded at a rate of nearly 1,000 cubic yards of soil per minute.) In hilly terrain the tearing up of the soil promotes erosion. In Indochina, where some of the soil is vulnerable to laterization (hardening to a bricklike state), the removal of vegetation and humus may make the area in and around craters permanently barren. At the least it has resulted in colonization of cratered regions by weedy, worthless grasses and shrubs. Furthermore, the deep craters have made many areas almost impassable for travel.

Many of the craters, particularly in the Delta and coastal regions, have penetrated the water table and remain filled with water during much or all of the year. They have thereby probably become breeding grounds for mosquitoes, greatly increasing the hazards of malaria and dengue fever for the population. Reports by military authorities indeed confirm that "malaria has been causing increasing concern in Vietnam" and has spread to previously unafflicted areas.

The impact of cratering on agriculture has been substantial. Farmers in South Vietnam, notably in the Mekong Delta, have been reluctant or unable to attempt to reclaim rice paddies or other farmlands that have been pocked by craters. One of the important deterrents is the presence of unexploded munitions buried in the ground. A number of farmers have been killed by the detonation of such shells or bombs by their plows. Moreover, the ubiquitous missile fragments in the ground cut the hooves of the water buffaloes used as draft animals, causing infection and death of the animals. The unexploded bombs and shells lying about in the soil of Indochina are known to number several hundred thousand. Bombing has also disrupted rice-growing in Indochina by breaking up many of the intricate irrigation systems, and in some areas near the seacoast it has opened the land to encroachment by salt water.

The timber industry of South Vietnam, potentially one of the most important elements in the region's predominantly agricultural economy, has been particularly hard hit by the bombing. It has catastrophically slashed the values of the once prime timberlands northwest and northeast of Saigon, for example. The heavy shelling and bombing have damaged the trees in three ways: outright destruction, riddling of the timber by missile fragments and subsequent weakening of the trees through infection by wood-rotting fungi.

The forests have been bombarded by ordnance so intensively that the trees are filled with metal shards; one millowner told us that four out of five logs he receives have metal in them. Although the sawmill operators make laborious efforts to chop out the pieces of metal, they are only partly successful, with the result that they have a high rate of destruction of their saw blades by still embedded metal. In trees left standing the missile-fragment wounds provide ready entry for fungal rot. In some tree species the rot progresses so rapidly that if they are not harvested immediately after the metal attack they soon become almost worthless. Apparently the main South Vietnamese timber trees lose about 50 percent of their value in two or three years from this cause. Rubber trees are particularly susceptible to the fungal rot initiated by missile-fragment wounds; they become so weakened that they are felled by any high wind. A French official of a rubber plantation told us he had lost 80 percent of his

trees within two years after a bombardment of his plantation.

Loggers in the battle zones of South Vietnam find that the damaging of timber by munitions is causing them a loss of more than 30 percent in the price received for the logs (although the severance tax remains the same). In addition the profusion of craters impedes the hauling of their logs to the mill. Often they must cut the logs to a short length (instead of the desirable 90 feet that is possible under normal circumstances) to allow sufficient maneuverability to skid them around around the craters. During a survey in a high-flying helicopter of a mountain forest near Da Nang we saw many craters on the mountainside and along the ridges with severe accompanying erosion; they had been produced by a single B–52 raid about a year and a half earlier. We also observed another significant type of damage: large areas of the forest had been burned out, apparently by incendiary attacks with napalm, white phosphorus and flares.

Bombardment and defoliation are by no means the only methods used by the U.S. military in its struggle with vegetation in Indochina. Beginning in the mid-1960's a vast program of systematic forest bulldozing has been developed. The employment of massed tractors organized into companies for extensive forest clearing had apparently replaced the use of herbicides to deny forest cover and sancturay to the other side. The effectiveness of the tractors, called Rome plows, is in some ways clearly superior to that of chemicals and is probably more destructive to the environment. When we visited a land-clearing operation in August 1971, we watched about 30 such plows (20-ton Caterpillar tractors fitted with massive 11-foot-wide, 2.5-ton plow blades and with 14 tons of armor plate) scrape clean the remaining few areas of the Boi Loi Woods northwest of Saigon. We learned that in the 26 days prior to our visit the company had cleared 6,037 acres. Four other companies were also in operation and these five units had cleared a total of 750,000 acres as of August, 1971. We visited an area that had been plowed several years previously and it had regrown to cogon grass (*Imperata*), making further successional stages to the original hardwood forest very unlikely.

A study by U.S. agents has determined that about 10 percent of the agricultural land of South Vietnam has had to be abandoned because of the destruction wrought by bombardment and other weapons used in this war. It has been a war against the land as much as against armies. Indeed, it appears that one of the main strategies of our military effort has been to disrupt and destroy the social and economic fabric of rural, agricultural Vietnam in order to drive the peasant population into areas under central control and to deprive the guerrilla enemy of a power base.

Only about 5 to 8 percent of the U.S. bombing missions in Indochina have been directed at tactical military targets, that is, in direct support of troops. The rest of the bombing missions are described as "harassing" or "interdiction" attacks. They are also referred to as strategic bombing missions. Whereas the targets of strategic bombing in World War II were the factories, port cities, railroads and so forth of the enemy, in the Indochina war the strategic targets are the land and forests of Indochina because they give cover and sanctuary to the other side. It is important to note here that whereas factories, ports and other man-made sources of production can be rapidly rebuilt, as demonstrated in Europe and Japan, it is doubtful that many of the forests and lands of Indochina can be rehabilitated in the foreseeable future.

From 1966 on the B–52's carried out incessant attacks on a schedule of almost daily missions. From an altitude of 30,000 feet, where they are usually unheard and unseen from the ground, they have been sowing systematic destruction. A typical B–52 mission, comprising seven planes on the average, delivers 756 500-pound bombs in a pattern that saturates an area about half a mile wide and three miles long, that is, nearly 1,000 acres. Thus on a schedule of four or five missions per day of seven sorties each, such as was followed during 1971, the B–52's alone were creating about 100,000 new craters each month. Unfortunately the release of air-war data is now severely restricted.

The cumulative impact of the munitions attack on the land has to be seen to be grasped fully. Reports by military observers speak of the landscape's being "torn as if by an angry giant," and of areas of the green delta land's being pulverized into a "gray porridge." Our brief survey has only suggested some of the grim consequences for the present and future life of the inhabitants of Indochina. Still to be assessed are the effects of the persisting bombardment on the people's habitations, on the animal life and general ecology of the region. The damage caused by the large-scale disorganization of the environment may be felt for centuries.

Meanwhile the steady bombardment and shattering of the land, shielded from the Western world's view and concern by the wide Pacific Ocean and the supposed "winding down" of the war, goes on with no end in sight.

Senator Gaylord Nelson of Wisconsin has introduced in the Senate a bill to provide for a study by the National Academy of Sciences "to assess the extent of the damage done to the environment of South Vietnam, Laos and Cambodia as the result of the operations of the Armed Forces of the United States . . . and to consider plans for effectively rectifying such damage."

Senator Nelson declared:

"There is nothing in the history of warfare to compare with [what we have done in Indochina]. A 'scorched earth' policy has been a tactic of warfare throughout history, but never before has a land been so massively altered and mutilated that vast areas can never be used again or even inhabited by man or animal. . . . These programs should be halted immediately before further permanent damage is done to the landscape.

"Our program of defoliation, carpet bombing with B–52's and bulldozing . . . did not protect our soldiers or defeat the enemy, and it has done far greater damage to our ally than to the enemy.

"The cold, hard and cruel irony of it all is that South Vietnam would have been better off losing to Hanoi than winning with us. Now she faces the worst of all possible worlds with much of her land destroyed and her chances of independent survival after we leave in grave doubt at best."

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## NEW INTERNATIONAL MONETARY SYSTEM

Mr. JAVITS. Mr. President, Walter B. Wriston, chairman of the First National City Corp., in a speech before the Bankers' Association for Foreign Trade on May 9, 1972, has made a most useful contribution to the debate that is presently underway on the future of the international monetary system and the role of the dollar within this system.

The points that Mr. Wriston so eloquently made and which deserve the attention of Senators include the following:

1. The world must live from now on with the reality that the dollar is just another currency. Like other currencies, it is not immune to pressures. Nor is it immune to devaluation whenever our external accounts are persistently out of balance.

2. The time has come for greater exchange-rate flexibility. This could help solve a multitude of problems. If currencies were exchanged at their true market values, there would be massive balance of payments surpluses or deficits. Adjustments would tend to be taken care of by the market.

3. What I suggest to you today is that neither fixed exchange rates nor the convertibility of the dollar into gold represent very realistic options in today's world. Unfortunately, the choice before the world is either to go back to the jungle of exchange controls, nationalism and momentary trade advantage; or, alternatively, to accept a greater exchange rate flexibility between the dollar and the other major currencies in the world.

4. It is a time for a new beginning of a new international monetary system. It is not the time to go back to yesterday's mechanism nor for the nations of the world to turn inward and to re-build a network of controls. The ability of the free markets to adjust to the realities of the world is enormous and exceeds even the confidence of their greatest advocates. We should urge it along. The dialogue has already started. Today, more than ever, there is an urgent need for the highest degree of international cooperation, both at the governmental and the private level.

I ask unanimous consent that the complete text of Mr. Wriston's address be printed in the RECORD.

There being no objection, the address was ordered to be printed in the RECORD, as follows:

THE GLOBAL ATTIC

(By Walter B. Wriston)

A great deal has been written about the direction and tempo of change in today's world. America's attitude toward gold is a case in point.

There was a time just before the Second World War when a top economist of the Federal Reserve Board, Mr. E. A. Goldenweiser, predicted that one of the great problems facing the world and the United States would be to achieve a redistribution of gold after World War II. Our severest critic would now concede that such a redistribution has been achieved.

As learned men have worried about our capacity to distribute gold to the world, so also in the past there has been at least one time when the United States was reluctant to accept gold—even as a gift. That hesitation occurred in the early 1800's when the wealthy British scientist, James Smithson, directed that his entire estate should go to the United States to establish an institution "for the increase and diffusion of knowledge among men."

Those of you who are impatient with the progress of monetary reform can take comfort in the fact that the question of whether or not to accept the largess of the late Mr. Smithson was debated in and out of the Congress for ten years. While the controversy raged, the legacy—nearly 105,000 British pounds paid in gold sovereigns—was delivered from the hold of a clipper ship to the Philadelphia mint where it was smelted down and recast as American coin. In those days, this came to an amount well over a half a million dollars, which was a considerable fortune.

The money itself was deposited in the United States Treasury at an interest rate of six percent per annum. It remained there until Congress, largely through the urgings of John Quincy Adams, who had to overcome the strong objection of John C. Calhoun, graciously accepted this alien gold in 1846 and with it created what is now the Smithsonian Institution.

Irreverent souls have dubbed the Smithsonian Institution, America's attic, for into it we pour all the memorabilia of this country. After the recent meeting of the Group of Ten Finance Ministers in the Romanesque commons room of the Smithsonian to hammer out a new international financial pack-

age, the ministers left behind a kind of monetary memorabilia. They gave the Institution renewed prominence, turning it from America's attic into a global attic.

Museums, after all, are treasure houses of the past; they are places where people go to see beautiful or valuable objects or to see things which were once important, but no longer function as useful things in our society. In this larger sense, it seems to me fitting and proper that a museum was the setting for the signing of an agreement which sharply departs from two once valuable and important monetary institutions.

It is possible that the concepts of fixed exchange rates and the convertibility of the dollar into gold were left in the Smithsonian to take their place beside Eli Whitney's cotton gin, the Spirit of St. Louis and rocks from the moon. In another sense, perhaps we should be hanging up in the costume gallery at the Smithsonian, a suit of the Emperor's clothes because the world perceived that these twin pillars of our monetary system existed for a period long after they had ceased to have any reality.

While they existed, they served the world very well indeed. The link to gold helped the dollar evolve gradually into the main international reserve asset. It led to an open and expansive international monetary system which responded unobstrusively to the action of the Governors of our own Federal Reserve Board. This system provided a degree of international monetary stability which allowed the dismantling of the network of exchange controls that had been built just prior to and during World War II. But men and nations tend to endow their successful institutions with an unlikely immortality—often without really understanding why these institutions worked or how much of their success depended upon wholly extraneous conditions.

The world is full of folklore and myths which are stated as facts and upon which many seemingly logical arguments are based. It is the old story of being more comfortable with illusion than with truth. The international monetary arena is no exception. One of the fundamental tenets of times past was the desirability of fixed exchange rates. The case has been made, time and again, that one of the main reasons world trade has grown and prospered since the end of World War II was because we had a system of fixed exchange rates. This premise, which is often accepted as gospel, is in reality no more than a polite fiction.

Let me remind you, for example, that the largest two-way trade in the world is between Canada and the United States. The Canadian Government has never fixed the price of gold. Canada, in fact, also allowed its exchange rate to fluctuate from September 1950, until May 1962, and again from May 1970 until the present day.

Our friends in Europe sometimes take this illustration as atypical. They tell me that Canada and the United States are somehow different. At times, Europeans forget that Italy did not have an established par value for the lira with the International Monetary Fund from 1946 until 1960. France, often said to be the bastion of monetary orthodoxy, did not establish a par value with the IMF during the ten years between 1948 to 1958. France, where fixed exchange rates are spoken of with reverence, has changed its currency in relation to other currencies no less than seven times since 1948.

Out of 21 major industrial countries, only the United States had no change in the par value of its currency between 1946 and last December. Twelve of the 21 nations devalued their currencies more than 30 percent against the dollar. Five nations—Germany, the Netherlands, Switzerland, New Zealand and Austria—had upward revaluations. Of the world's leading currencies, the yen was the most nearly fixed after the dollar. The exchange rates in the developing countries have been even more unstable.

In reality, absolute fixed rates were indeed a myth. We have long paid lip service to them when, like the Emperor's clothes, they did not really exist. What we had, instead, was a fixed dollar that became the bench mark against which other currencies fluctuated. The dollar was said to be as good as gold, and the option of devaluing the dollar against other currencies to redress our own balance of payments was not open to the United States. Other nations, however, could avail themselves of the option of devaluing against the dollar. The record shows that in a period of so-called fixed exchange rates, this option was used by other countries again and again.

The fixed exchange rate system probably reached its zenith in 1958 when many exchange controls were removed and general external convertibility was introduced. The test of the compatability of fixed exchange rates and free exchange markets then began. Unfortunately, it was free markets that gave ground and, indeed, the United States was among the countries which began imposing new exchange controls early in the 1960's.

It could be argued that these controls were aimed not at defending the dollar, but at defending the price of gold and the fixed exchange rates. Since then, we have seen controls become more and more pervasive in a series of futile efforts to support inflexible rates.

The other myth which sustained us in the postwar period was that the dollar was convertible into gold. We have all known, at least since 1960, that the convertibility of the dollar into gold was a myth. We all knew that if any central bank in the world attempted to convert a massive amount of its dollar reserves into gold, the United States would use every diplomatic device to dissuade them. The money traders of the world knew too, that if any nation persisted in demanding gold, the United States would shut the gold window.

The statistics show that the United States' share of the world's monetary gold, which in 1949 reached 70 percent, has declined today to roughly 25 pecrent. In a dangerous world it is unrealistic in the extreme to believe that the U.S. would not keep enough hard metal reserves to meet any contingency. It was obvious, therefore, to all who would look, that the day would soon come when we would not permit our gold reserves to dwindle further.

One of the reasons that world trade grew and prospered in the postwar era was the relative peace that the world enjoyed. In no small measure, this relative calm could be attributed to the fact that the United States of America paid the price to hold the nuclear shield protecting both ourselves and our allies and kept the uneasy balance of power. Over the years, we have paid a disproportionate amount of these costs, which are now beginning to be shared more equitably. While we paid the check for the defense of the free world, on the commercial front the American dollar fueled the revival of Europe and Japan.

In fact, the world learned to live off the U.S. balance-of-payments deficit and to enjoy it. The Japanese were able to permit the yen to become substantially undervalued relative to the dollar and such undervaluation acted as a massive and continuing subsidy for its own exporting industries. A return to the convertibility of the dollar would be a return to efforts by the United States to continue underwriting a fixed exchange rate system, which in trade terms has worked largely against our interests.

These days are past, and the concept of a dollar convertible into gold, which really has not been anything but a concept for a number of years, should be left in the Smithsonian with the other exhibits.

Money and trade must always be viewed together and the Smithsonian Agreement recognized this fact, since it has become increasingly evident that the barriers to American exports were growing around the world. The use of trade restrictions of one kind or another as an instrument of national policy to readjust the balance-of-payments equilibrium was specifically authorized by GATT and IMF decisions. Happily, these privileges have been used sparingly. To those at home and abroad who shy away whenever the linkage of trade and money is mentioned, we must constantly reemphasize that they are, in fact, inseparable.

At this moment in history, the world is suffering from a kind of cultural shock since for the first time in a generation, American negotiators have seriously advanced our own economic national interest and not just the concept of freer trade. This posture has been taken by some of our friends as an indication of arrogance and rudeness when, in fact, this is not the case. Our position reflects only the realities of the day. It marks the end of the postwar period when the United States picked up the check for the world, while at the same time permitting our trading partners to raise barriers to the export of American goods. It is a new world, a new set of circumstances, and it calls for new attitudes all around the table.

The Bretton Woods Agreement was a masterly document which basically lay fallow until the late Per Jacobsson breathed life into the Fund. It was drafted in an era in which the assumption was made that the nations of the world would be politically willing and able to accept the discipline of the gold exchange standard as a brake on their domestic priorities. The system that actually developed really imposed no such discipline, and it is difficult to find a historical example of a nation which did, in fact, consistently subordinate its domestic economic policies to the requirements of international payments equilibrium. The fact that the United States underwent four major recessions in the last twenty years—none of which corrected our balance of payments—is often overlooked in harsh admonitions from our friends abroad who keep insisting that we should put our "house in order" though restrictive monetary and fiscal policies.

The classical gold standard, so brilliantly described many years ago by Jacob Viner, could operate in the days when national value systems were quite different from what they are today. One has to live in a dream world, not the real world, to believe that the government of any nation will permit the discipline of the balance of payments to override what it perceives to be its own national priorities. Whether we like it or not, there is not a government in the world which is not committed to maintain full employment for its citizens. If the choice is perceived to be between maintaining reasonably full employment and readjusting currency values, the decision is predictable.

What made fixed exchange rates possible was the special status of the dollar. The acceptability of the dollar as a reserve asset, coupled with the Federal Reserve's expansive policy in the Sixties, helped other countries to maintain high growth rates and full employment, and at the same time to build their international reserves. Under this system, U.S. payments deficits actually fueled world production and trade. In effect, the Federal Reserve became, perhaps unintentionally, a kind of supranational central bank shaping monetary policies around the world.

Other nations were not always happy with the consequences of this set of circumstances. This was particularly true after 1964, when the United States first began to be accused of exporting inflation. The Federal Reserve's international role, however, had its beneficial side. It served to coordinate monetary expansion in the other industrial countries suffi-

ciently to keep their price levels more or less in line with each other. In retrospect, the Federal Reserve's role made it possible for major exchange rates to remain relatively stable prior to the mid-Sixties.

To be sure, the apparent link between gold and the dollar added to its attraction as a reserve asset. But that link also concealed the politically unpalatable fact that the world was on a *de facto* dollar standard. In reality, it was not the dollar's supposed link to gold that made this system work, but rather the dollar's fixed value in relation to other currencies.

While other exchange rates might rise or fall individually, the dollar was presumed to be immutable. It was taken for gospel for a long time that the dollar itself would never be devalued by the United States. Nor would it be devalued by the collective revaluation of other important currencies. This post-World War II assumption is what made the dollar, for so long, the international money *par excellence*. This is what made it possible for the United States to serve as a kind of central banker to the world.

All of this is now history. The general upward movement of other currencies against the dollar in the spring of 1971 was the point of no return. The formal suspension of the gold link and the Smithsonian Agreement merely drove the point home.

The world must live from now on with the reality that the dollar is just another currency. Like other currencies, it is not immune to pressures. Nor is it immune to devaluation whenever our external accounts are persistently out of balance.

There are many people in Europe and some in this country, however, who cling to the old monetary myths. They insist there is no alternative to fixed rates and the gold-dollar system. They claim that all countries have the responsibility of keeping their external payments in balance at fixed exchange rates by domestic measures. My conclusion is different. The evolving international monetary system must be more flexible than that. It must not be put in the strait jacket of fixed exchange rates—at least between the dollar and other major currencies. It must not be dependent upon the convertibility of the dollar into gold or into Special Drawing Rights. These are no longer realistic options.

The time has come for greater exchange-rate flexibility. This could help solve a multitude of problems. If currencies were exchanged at their true market values, there would be no massive balance of payments surpluses or deficits. Adjustments would tend to be taken care of by the market. This would greatly reduce the importance of international reserves and also the whole problem of what reserves should consist of—gold, silver, diamonds or Special Drawing Rights. Flexible rates would also eliminate the intricate machinery for trying to keep the values of various reserve assets stable.

Not the least of the virtues of such flexible rates would be a state of affairs in which we would again become masters in our own house. This is to say that we, and other countries as well, would be more at liberty to run our domestic economic life without worrying so much about the alignment of our price levels or business cycles with the rest of the world. The movements of the exchange rate would automatically adjust for any imbalances. In short, flexible or floating rates would render unto the market what belongs in the market.

The bureaucrats of the world are all brothers under the skin and will relentlessly press the notion on their political masters that the world should once again go back to the jungle of exchange controls. The tendency to hold fixed exchange rates in such high regard seems to provide a legitimate excuse for the imposition of exchange controls and other trade barriers as a means of maintaining these rates. The process feeds on itself. There are always voices raised in high places suggesting that the United States control its outflow of capital, that other nations control the inflow of capital, and that the judgment of the free market be negated by a network of regulations. All this, despite the fact that short of an all-out war, there is no instance in recorded history where direct controls have worked over any extended time frame.

The tide of nationalism is rising around the world and the voices of those who would throw away the experience of dismantling trade barriers in the last quarter of a century are growing louder. In my own country, we have the introduction in our Congress of the Burke-Hartke Bill, which is perhaps the worst piece of legislation introduced since the Smoot-Hawley Tariff. In the expanding Common Market, the progress in lowering the barriers, tariff and non-tariff, against our goods is slow. It is time for those of us who believe in free markets internationally to stand up and be counted. It is time for people of all nationalities to review the dreary history of controlled economies and to speak out for free markets.

Since it threatens the popular old myths, a freer system of exchange rate adjustment has enjoyed a bad press; nevertheless, the wider bands set by the Smithsonian Agreement are a first tentative step in the direction of freer exchange rates.

It is an interesting irony of history that people always prefer the devil they know. The general response around the world to the breakdown of the gold and dollar system has been a general reassertion of the belief in fixed exchange rates and convertibility of the dollar into gold or at least into Special Drawing Rights.

What I suggest to you today is that neither fixed exchange rates nor the convertibility of the dollar into gold represent very realistic options in today's world. Unfortunately, the choice before the world is either to go back to the jungle of exchange controls, nationalism and momentary trade advantage; or, alternatively, to accept a greater exchange rate flexibility between the dollar and other major currencies in the world.

If rates were made more flexible, the question of the dollar's convertibility into gold or Special Drawing Rights would lose a great deal of its apparent importance. Payments deficits and surpluses between the dollar and other major currencies would tend to be minimized. This process, in turn, would tend to downgrade the importance of the question of reserve assets and convertibility.

It is time for a new beginning of a new international monetary system. It is not the time to go back to yesterday's mechanism nor for the nations of the world to turn inward and to rebuild a network of controls. The ability of free markets to adjust to the realities of the world is enormous and exceeds even the confidence of their greatest advocates. We should urge it along. The dialogue has already started. Today, more than ever, there is an urgent need for the highest degree of international cooperation, both at the governmental and the private level. The complexity of the problem argues for deliberation rather than for speed.

Those of us who work in the area of world trade and finance must use whatever influence we have to insure that the new payments mechanism will continue to permit the world to expand its areas of freedom, and not to return to the restrictive practices of the late 30's and the World War II period. Nothing less than the direction and prosperity of the world is involved in this decision.

## McGOVERN ON HOUSING

Mr. HARRIS. Mr. President, the 1972 election could prove a watershed in American history. For the first time since the turn of the century a man has become a major contender for the Presidency by raising fundamental issues about the nature of our society.

As more and more grateful voters are beginning to understand, the campaign of GEORGE MCGOVERN is not following the traditional pattern. To the astonishment of journalists, political pros, but not the electorate, he is asking questions that in previous campaigns candidates have been afraid to ask. These are questions such as the following: What is a fair tax system from the standpoint of the average voter instead of the money interests? What level of defense spending do we really need when even the Defense Department's own boosters admit there are billions of dollars wasted in Defense spending?

Not only has Senator MCGOVERN asked such questions, but he has courageously attempted to answer them. He has provided the country with detailed position papers outlining what a McGovern administration would do to correct the grave political and social problems facing the country. More than any candidate from either party in my memory, he has been able to say that people who vote for him have an opportunity to understand the kind of program they are endorsing.

Mr. President, Senator MCGOVERN recently outlined his views to the American public on another vital issue facing the country, the housing crisis. Twenty-three years ago the Congress pledged that every American family should be able to have a decent home "as soon as feasible." Yet today the log cabin where Abe Lincoln was born in 1809 was a better home than millions of American families have today.

Six million families still live in substandard housing. Millions more, who are more affluent, still cannot afford to pay the price of a new home. The average American family cannot afford to pay much more than $15,000 for a home. Yet the median price for a conventionally built new home is over $27,000.

To meet this crisis, Senator MCGOVERN proposes a national housing policy based on ending the exclusive power of private developers, speculators, brokers, dealers, and mortgage banks to decide where livable housing will exist and who can occupy it. In its place, Senator MCGOVERN will transfer that power to the housing consumer, by endorsing the right to decent housing "not through guarantees to the builder and the banker, but by income support for the individual."

Other Senators will wish to study Senator MCGOVERN's innovative proposals in the field of housing. I therefore ask unanimous consent that they be printed in the RECORD.

There being no objection, the proposals were ordered to be printed in the RECORD, as follows:

MCGOVERN FOR PRESIDENT

Senator George McGovern charged today that the Nixon Administration has "abandoned the nation's cities."

In an address to a nationwide conference of neighborhood organizations seeking to end real estate abuses, McGovern cited Administration neglect of center city needs and said Federal housing programs "have become engines for destroying decent homes and livable neighborhoods, and for perpetuating segregated housing."

He said the "first requirement for saving urban neighborhoods and ending urban decay is a new Administration in Washington."

Along with rigorous regulation and enforcement against unscrupulous housing practices, McGovern offered a housing policy based on ending "the exclusive power of private developers, speculators, brokers, dealers and mortgage banks to decide where livable housing will exist and who can occupy it."

He said part of that power should go to the housing consumer, by enforcing the right to decent housing "not through guarantees to the builder and the banker, but by income support to the individual."

Another part, he said, "must be assumed by the public—by Federal, State and local agencies working to build communities instead of just the component parts."

In line with that policy, McGovern said an initial direct federal investment in land, using the power of eminent domain, could assist the development of integrated satellite communities that would be coordinated with transportation and would fit into a sensible pattern of metropolitan growth.

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TO RECLAIM AMERICAN CITIES

(By Senator GEORGE MCGOVERN)

I am grateful for the opportunity to participate in this important national conference on housing abuses.

You are confronting issues which bear directly on human life and dignity. And that is not a capricious description.

Our investigations in the Senate Select Committee on Nutrition and Human Needs have uncovered shameful conditions of hunger and malnutrition in this country—conditions which afflict and disable millions of American men, women and children.

But we have also discovered that many Americans who suffer bad diets do so because they are driven to a choice between food and shelter, and they choose shelter first.

Housing costs have first call on poverty income. A decent diet must come from what is left over.

That single example demonstrates that you are wholly correct in regarding access to good housing as a first priority national concern.

You are equally correct in focusing on housing abuses—in real estate dealings, in insurance, in home finance, and in the operation of government housing programs—as a primary influence in the destruction of the urban environment.

They are propelling us ever faster toward the two societies—toward the metropolitan apartheid and the economic caste structure—that was foreseen by the Kerner Commission some three years ago.

And they are transforming our central cities into decaying prisons for the poor.

You know how the process works:

the blockbuster who uses panic to produce high volume housing sales,

the "investor" who buys houses at distress prices,

the unscrupulous real estate salesman who inflates the price, misrepresents the condition of the house, and finds an unsuspecting buyer,

the mortgage company which makes any loan it can shove past FHA,

and then FHA itself, often swallowing false appraisals, often failing to examine credit, nearly always guaranteeing mortgages on systems which underwrite FHA ghettos.

When foreclosure is inevitable an "investor" may buy the deed and collect illegal rent.

Or the buyer may just pull up stakes, leaving FHA with the property and the mortgage company with a claim on the national treasury.

But in any case another good neighborhood has fallen.

We are just beginning to see the dimensions of this disaster.

The physical destruction is most obvious—rows of abandoned houses, boarded up shells and vacant lots. All major cities have their examples.

But the most painful harvest is bitter people.

Low income minority families are bitter because they have been sucked into shoddy housing by unscrupulous dealers and FHA money.

And the whites who moved out are bitter because they lost their investment in their homes, their neighborhoods, and a way of life.

Each tends to blame the other.

But in fact both sides have been victimized by a collection of fast money artists, assisted by an agency that was set up to work for the people.

The housing programs designed to promote home ownership and to rehabilitate the older areas of American cities have become engines for destroying decent homes and livable neighborhoods, and for perpetuating segregated housing.

The truth is that the Nixon Administration has abandoned the nation's cities to this hopeless process.

It has failed to use its authority, both for criminal prosecutions and regulations, to end the practices this conference is addressing. Despite repeated requests from citizens groups, HUD has failed to move in all but the most flagrant cases.

In one of its last acts in office the Johnson Administration opened the doors to previously excluded minority groups. But the Nixon Administration followed through by cutting the manpower assigned to help newly eligible buyers—an open invitation to the process I have just described.

The early talk about an urban growth strategy fell dead at the lips of Administration spokesmen.

Project Rehab—the rehabilitation counterpart of Project Breakthrough—has fallen flat on its face.

Funds to deal with the burgeoning problem of abandonment of center city homes remain unspent and unproductive.

The condition of the center city has been ascribed to many causes. But most of all it stands as a monument to the misplaced priorities and the bungling of the Nixon Administration.

It follows that the first requirement for saving urban neighborhoods and ending urban decay is a new Administration in Washington.

We need an Administration that will come down hard on the side of groups seeking to end housing abuses.

That new Administration must actively regulate mortgage banking, including systematic credit checks so that buyers will no longer be bilked into paying more than they can afford.

It must end sweetheart arrangements between FHA and realtor-appraisers, arrangements which permit and encourage the sale of substandard housing at inflated prices.

It must eliminate the point system on FHA-guaranteed loans—a system which enforces housing segregation just as effectively as a billboard reading "whites only."

Most of all, the new Administration must adopt some fundamental new directions in housing policy.

We must make the decision to end the exclusive power of private developers, speculators, brokers, dealers and mortgage banks to decide where livable housing will exist and who can occupy it.

Part of that power must go instead to the housing consumer.

We ought to establish decent housing as a basic right of citizenship in this country, enforced not by guarantees to the builder and the banker, but by income support to the individual.

Specifically, the minimum taxable income grant which I have proposed for all Americans should be accompanied by a housing allowance with variations according to income and local housing costs. The individual should have a chance to choose between a one-time capital grant, to rehabilitate an existing residence or to meet the down payment required for conventional financing, or stretched out assistance to help with rentals or federally-guaranteed loans.

Action of this kind would do more than anything else we might imagine to break down barriers to integrated housing, simply by allowing the market to work and by expanding the range of economic choices.

Another part of the power of decision must be assumed by the public—by Federal, State and local agencies working to build communities instead of just the component parts.

One way to do this would be to direct new towns' funds at the point of the most immediate and urgent need—on small satellite communities adjacent to major cities, and ultimately in the cities themselves. An initial direct federal investment in land, using the power of eminent domain, could assist the development of truly integrated communities, coordinated with transportation and job prospects and fitting into a sensible pattern of metropolitan growth.

There are other essential elements to a serious program to save and restore the inner city.

The federal government should assume at least one-third of elementary and secondary education costs, allocated to meet minimum standards of educational quality in every school.

That is the kind of commitment we must have if we are to truly end the system in which a child's chance to attend a decent school depends on where he is born, where he is bused, or where he runs to escape a declining urban environment.

And it is the kind of commitment we must undertake, along with replacement of the welfare system, if we are to release local revenues for essential community services in every neighborhood—for fire and police protection, for waste disposal, for public utilities, and for other responsibilities of local government.

The programs I have outlined can transform our society. And they are realistic prospects for the 1970's.

They will not be accomplished by the Nixon Administration. You've seen the symptoms in tax policy, in economic policy, in anti-trust enforcement, in Lockheed loans, in housing, and in a host of other areas. This Administration has a congenital incapacity to place the public good ahead of special privilege—a disability it was born with because of its sources of support.

Nor will these hopes be realized by old politics candidates who get their money from the same places; who are long on spending promises and short on plans to raise the funds; or who propose to tinker with the system and call it new priorities.

Instead the 1972 elections must make a real difference in how the national government raises and spends its revenues.

That is why my first major proposal in this campaign was a plan to rewrite today's fiction of a progressive tax structure—a tax reform program that can raise $28 billion a year with no change in rates.

And it is why my second major proposal was an alternative program for national defense that will recapture more than $32 billion from a bloated, wasteful and dangerous military establishment.

In the last analysis it is on programs of that kind that the future of our cities, and the future of our society, will depend.

And I make one guarantee here today.

If this campaign is successful, those programs will be pressed with every ounce of

energy I have, and with every shred of power in the presidency.

I welcome your advice, and I ask your support.

## U.S. FOREIGN POLICY

Mr. DOLE. Mr. President, just over 3 years ago when President Nixon took office, the United States was entrapped in a foreign policy noted more for its excesses than for its restraint. Members of this body argued that America had become the world's policeman.

President Nixon has from the outset set out to change things. Six months after taking office he voiced what is now called the Nixon doctrine, saying:

> We must avoid that kind of policy that will make countries in Asia so dependent upon us that we are dragged into conflicts such as the one that we have in Vietnam.

Today, the war in Vietnam is a very different war from what it had become by 1969—under the guidance or misguidance of two Democratic Presidents and a Democratic Congress.

What was an American war in Vietnam has become increasingly and overwhelmingly an effort of the South Vietnamese people to insure themselves a chance to choose the kind of lives they live.

### PRESIDENT NIXON HAS SAVED AMERICAN LIVES

President Nixon has withdrawn over 500,000 troops. And he has saved the lives of American troops who were dying at the average rate of more than 1,000 a month. Even our draft calls have been cut by three-fourths—and by 1973 will have dropped to zero.

In recent weeks the North Vietnamese have made very plain their true intention regarding South Vietnam. They are not seeking an end to American assistance for South Vietnam. They are seeking an end to the existence of South Vietnam—by whatever means necessary. On Easter weekend, the full armies of North Vietnam began a total invasion of South Vietnam, complete with new and advanced weaponry provided—for whatever reason—by other major powers, including the Soviet Union.

It was in response to this act of incredible arrogance—fueled by enemy deceit at the so-called peace table—that the President moved to prevent the North Vietnamese bandits from receiving further supplies with which to kill more people whose only crime is a desire to be left only to live their lives in peace.

### SOME SEEM TO FORGET THEIR PAST

I am sad to say that even this new and most flagrant violation of international law and decency has not aroused some Americans. I am bewildered by the vacillation exhibited by some whose major aim seems to be to forget their part in creating America the world policeman so they can feel free to criticize a President who has not only moved to change American policy, but has moved to change our policy in a way that will not destroy our friends.

During the 1960's who was it that made Vietnam a war without end? Who sent American troops there? Who promised South Vietnam all the help they needed?

Independent of the wisdom of making those promises, there is a deeper moral problem. Should men who made those promises and made possible a conflict of growing proportions, desert a President who is trying to keep their promise. Should those who raised South Vietnamese hopes, yet could not make them come true, castigate a President who is merely trying to prevent a North Vietnamese army from completely ending those hopes?

### THE UNITED STATES SHOULD CONTINUE TO BELIEVE IN DIGNITY

The notion of bipartisanship does not mean that Members of the U.S. Senate should not disagree about foreign policy, but it does mean that the President of the United States should not be the victim of the kind of invective we have heard from some during the last few days. It does mean that the United States should continue to believe in the dignity and the authority of international law. And that aggression unchecked, furthered by other great powers, if not stopped will come to harm us all.

It is one thing for American armies to protect those who would be easy prey to aggression. It is something else for America to turn her back on those who steeled by our promises are still fighting to protect their own land from enemy hands.

John Kennedy once said:

> While we shall negotiate freely, we shall not negotiate freedom. Our answer to the classic question of Patrick Henry is still "No. Life is not so dear and peace is not so precious . . . as to be purchased at the price of chains and slavery." . . . We will always seek peace—but we will never surrender.

That is the promise which caused America to commit so much to the South Vietnamese fight for a free choice. Let all of those who applauded his words admit today that the sentiments are any less worthy now and that today after encouraging the hopes of South Vietnam they will decry the efforts of this President to give such words some meaning.

## EEOC FILES FIRST LAWSUIT UNDER TITLE 7

Mr. JAVITS. Mr. President, last February, after a monumental 5-week struggle on the Senate floor, we enacted into law a proposal to give the Equal Employment Opportunity Commission the power to enforce guarantees against employment discrimination contained in title 7 of the Civil Rights Act of 1964. Under the new law, the EEOC is permitted to file suits directly in the Federal courts to redress violations of title 7.

The EEOC today filed its first complaint under the new law. It is extremely gratifying that the Commission has been able to act so swiftly to utilize its new authority. Today's lawsuit may well indicate that we are about to enter the last, but clearly the most important and decisive phase, of the struggle to eliminate unlawful discrimination in employment opportunity once and for all. I am gratified to have played an active part in securing the passage of the new law. I ask unanimous consent that the Commission's press release concerning the suit filed today be printed in the RECORD.

There being no objection, the release was ordered to be printed in the RECORD, as follows:

### EEOC FILES FIRST SUIT UNDER NEW ENFORCEMENT POWER

WASHINGTON, D.C.—The United States Equal Employment Opportunity Commission today filed its first court action pursuant to the Equal Employment Opportunity Act of 1972. The complaint, filed in the United States District Court for the Middle District of Florida, Jacksonville Division, named as defendants the Container Corporation of America, six local unions and four international unions with which the local unions are affiliated.

The Commission alleges that the defendant company maintained segregated lines of progression and segregated facilities, used unvalidated tests as screening devices, and limited training opportunities for good jobs to white males. The defendant unions, all signatories to collective bargaining agreements with the company, were alleged to have "aided and abetted Container Corporation of America in the performance of the discriminatory practices . . ."

The suit follows unsuccessful attempts to conciliate complaints, previously filed by an EEOC Commissioner and by individual parties, alleging unlawful employment practices which discriminate against blacks and women at the company's Fernandina Beach, Florida plant.

An EEOC investigation found that both women and blacks were virtually excluded from higher positions in all its operations. Women were limited to clerical positions; blacks were used mainly in custodial and laboring jobs. The company is the only major industrial employer in the immediate area, which has a heavy black population.

The decision to file the suit was approved by a unanimous vote of the five presidentially appointed members of the Commission, which asked the Federal court to order "all such relief as will serve the purposes of the civil rights act." The complaint specified 13 actions which the court might order the defendants to take. These included a complete revision of seniority systems, special training for blacks and women, elimination of unvalidated tests, payment of back wages lost due to discrimination, hiring of blacks and women in a specified ratio, and revision of union by-laws to protect black members.

In addition to Container Corporation of America, the defendants include: International Association of Machinists and Aerospace Workers and its local, Island Lodge No. 40; International Brotherhood of Electrical Workers and its local unions Nos. 1924 and 2018; International Brotherhood of Pulp, Sulphite and Paper Mill Workers and its affiliates, Bucaneer Local No. 802 and Fort Clinch Local No. 415; and United Brotherhood of Painters, Decorators, and Paper Hangers of America and its local union, No. 164.

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UNITED STATES DISTRICT COURT FOR THE MIDDLE DISTRICT OF FLORIDA, JACKSONVILLE DIVISION

Equal Employment Opportunity Commission Plaintiff, versus Container Corporation of America: International Association of Machinists and Aerospace Workers, Island Lodge, No. 40, International Brotherhood of Electrical Workers, Local Union No. 1924, International Brotherhood of Electrical Workers, Local Union No. 2018; International Brotherhood of Pulp, Sulphite and Paper Mill Workers, Bucaneer Local No. 802; International Brotherhood of Pulp, Sulphite and Paper Mill Workers, Fort Clinch, Local No. 415; United Brotherhood of Painters, Decorators, and Paper Hangers of America, Local No. 164; International Association of Machinists and Aerospace Workers; International Brotherhood of Electrical Workers; International Brotherhood of Pulp, Sulphite

and Paper Mill Workers; and United Brotherhood of Painters, Decorators and Paper Hangers of America, Defendants.

I

This is an action brought by the Equal Employment Opportunity Commission, an agency of the United States Government, seeking relief from violations of Title VII, Civil Rights Act of 1964, 42 U.S.C. 2000e *et seq.*, as amended by Public Law 92-261 (March 24, 1972).

II

All conditions precedent to the institution of suit have been fulfilled.

III

Defendant Container Corporation of America is an employer subject to Title VII, Civil Rights Act of 1964, as amended.

All other defendants are labor organizations subject to Title VII, Civil Rights Act of 1964, as amended.

IV

The unlawful employment practices alleged below were and are being committed in Florida and venue properly lies in this judicial district.

V

Defendant Container Corporation of America operates facilities at Fernandina Beach, Fla., where it has engaged and is engaging in discriminatory employment practices against blacks and women, in violation of Title VII, Civil Rights Act of 1964, as amended, including, but not limited to, the following:

1. It has maintained a policy of hiring and assigning its employees on the basis of race, with blacks being hired for and assigned to the less desirable, more arduous, and lower-paying jobs with the least opportunity for advancement, and with whites being hired for and assigned to the more desirable, less arduous, and higher paying jobs with greater opportunity for advancement, a policy it followed on a formal basis until at least 1967, and in substance follows to the present;

2. For at least five years subsequent to the effective date of Title VII, it unlawfully maintained racially segregated seniority lines to the disadvantage of its black employees;

3. While it has belatedly integrated certain of its seniority lines and departments, the mechanism used for such integration perpetuates into the present the effects of past discrimination, locks black employees permanently into positions of inferiority, and imposes burdens on black employees who seek transfer which are not imposed on white employees similarly situated;

4. It refuses to confer equal benefits on black, employees even when such blacks have considerably higher plant seniority dates than white employees;

5. For approximately six years or more following the effective date of Title VII, it has required applicants for transfer to better paying, less arduous jobs, to pass unvalidated tests, not related to the jobs for which they are given, thereby blocking the advancement of black employees;

6. It requires more stringent qualifications in hiring, assigning, and transferring blacks than were and are required of whites hired, assigned, and transferred to the same or similar jobs;

7. It refuses to give black employees the same training opportunities it has given white employees;

8. It fails to provide opportunities for advancement to supervisory positions to black employees equal to those opportunities provided to white employees;

9. It hires black employees only into the lower paying jobs, denies them entry into clerical, professional, or supervisory positions, and hires whites rather than blacks into all job categories (other than in the wood-yard or as janitors) whenever possible;

10. It fails to advertise for, or recruit, blacks for clerical, technical, or supervisory jobs;

11. It limits the employment of women to clerical positions, with the result that it pays its women employees considerably lower wages than its male employees;

12. It makes no effort to train women to perform other than clerical tasks, thereby denying them entry into better paying, presently all-male positions;

13. It fails to advertise for, recruit, or hire females for clerical, technical, or supervisory jobs;

14. It refuses to take reasonable and appropriate affirmative action to eliminate its discriminatory practices or to correct the effects of past discrimination against blacks and women.

VI

Defendant unions are all signatories to collective bargaining agreements which cause Container Corporation of America to discriminate against blacks and women with respect to compensation, terms, conditions, and privileges of employment, in violation of Title VII, Civil Rights Act of 1964, as amended.

Defendant unions have aided and abetted Container Corporation of America in the performance of the discriminatory practices stated in Paragraph V, above, in violation of Title VII, Civil Rights Act of 1964, as amended, especially insofar as they have helped establish seniority systems and procedures for promotion, demotion, layoff, recall, and transfer which are based upon the length of service in certain occupations, lines of progression, departments, areas, and union jurisdictions, from which blacks and females have been excluded or had only limited access, rather than upon length of service with the Container Corporation of America and which, therefore, deprive blacks and female employees of an equal opportunity to compete with their white male contemporaries for the more desirable, better-paying jobs.

VII

Defendant union International Brotherhood of Pulp, Sulphite and Paper Mill Workers, and its Local 415, have, since the merger of the Local with all-black Local 805, International Association of Hod Carriers, Building and Common Laborers, failed and refused to adopt any transitional measures necessary to protect the interests of the black members acquired through the merger, in violation of Title VII, Civil Rights Act of 1964, as amended.

VIII

Wherefore, plaintiff prays this Court, in accordance with the provisions of Section 706(g), Title VII, Civil Rights Act of 1964, 42 U.S.C. § 2000e-5(g), as amended, and in accordance with the provisions of 42 U.S.C. § 1988 and other appropriate federal and state statutes, to grant all such relief as will serve the purposes of the civil rights acts, eliminate the discriminatory employment practices complained of, and make the victims of such discriminatory practices whole. Specifically, plaintiff prays this Court to order each appropriate defendant, jointly or severally, as the case may be, to:

1. Discontinue the present seniority systems or any seniority system which discriminates against black or female employees;

2. Permit incumbent black and female employees to use their accumulated plant seniority for all purposes, including promotion, transfer, layoff, demotion, vacation, and all other purposes for which seniority is used, without loss of pay, waiver of future bidding rights, or the imposition of other disabilities as preconditions;

3. Eliminate all unnecessary residency requirements as a condition for promotion of transfer into any job, department, or line of progression for all present black and female employees, and those applicants for employment who would have been hired but for defendants' discriminatory practices;

4. Employ any incumbent black or female employee who bids therefor in any vacant position to which he or she would be entitled by plant seniority, irrespective of previous experience and residence, unless defendants can demonstrate to the Court that, after a reasonable period of training, the particular black or female has been unable to acquire the skill necessary to perform the functions required by the position;

5. Provide such periodic apprenticeship and other training programs as will qualify black and female employees for advancement to skilled, technical, supervisory, and executive jobs in all divisions of the Fernandina Beach facility;

6. Use only such screening devices and such tests as are validated in accordance with 29 C.F.R. §§ 1607.1-1607.14;

7. Pay all incumbent black and female employees the difference between the pay actually earned and the pay (with accrued interest) which they would have earned since July 2, 1965, or their date of hire, whichever is more recent, but for defendants' discriminatory practices;

8. Recruit and hire at least one black for each white hired until such time as such staggered hiring has eliminated the effects of defendants' discriminatory practices and thereafter recruit and hire on a racially nondiscriminatory basis;

9. Recruit and hire at least one female, in other than a clerical position, for every white male hired until such time as such staggered hiring has eliminated the effects of defendants' discriminatory practices and thereafter recruit and hire on a basis which does not discriminate between the sexes;

10. Hire persons for clerical positions on a basis which does not discriminate between the races or sexes;

11. Pay all black and female applicants for employment denied employment at any time since July 2, 1965, because of defendants' discriminatory practices, back pay (with accrued interest) in the amount they would have earned but for such discriminatory practices until such time such applicants are offered positions equivalent to those for which they applied;

12. Establish such transitional provisions in the construction and by-laws of Local 415, including provisions for the election of black officers, as will protect the interest of black members for a three year period beginning with the effective date of the decree herein;

13. Take such other reasonable actions as may be necessary to correct the effects of the discriminatory practices alleged herein.

The Commission further prays that this Court retain jurisdiction over this action to assure full compliance with the decree and with Title VII of the Civil Rights Act of 1964, as amended, and that it require defendants to file such reports as this Court and the Commission deem necessary to evaluate compliance.

## ESCALATION OF VIETNAM WAR

Mr. TUNNEY. Mr. President, 3 days have passed since the President announced his new and accelerated military strategy for the war in Vietnam. The American mines in North Vietnamese harbors are now activated and ready to explode. The stepped-up B-52 raids and naval bombardments continue. The tough threats and warnings of more military action continue to pour from the White House, the Pentagon, and the lips of Presidential advisers and spokesmen.

These escalating steps and hard-line threats, the administration tells us, are necessary consequences to the recent

North Vietnamese offensive and are essential to what the President calls American interests.

There is no question that the North Vietnamese, supplied militarily by the Soviet Union and the People's Republic of China, have acted irresponsibly, belligerently, and cruelly in their latest offensive. There is no question that North Vietnam has cynically precipitated the most recent escalation of the war. I deplore and condemn North Vietnam's military aggression.

But the new military escalation of the war ordered by the President this week is equally deplorable. Despite all the pledges for peace, despite all the promises to end the war, despite all the high expectations of withdrawal which the administration has offered to the American people, this Nation once again is committed to a rigid, simplistic, brute-force-will-prevail policy.

It has not worked through a decade of American involvement in Southeast Asia. It will not work now. This great Nation has been reduced through the President's strategy to the ancient and uncivilized assumption that violence begets violence—and that nothing can be done to break that primitive pattern of human conduct.

The new acts of violence ordered by the President are even more dangerous than the irresponsible offensive of North Vietnam and her allies. By mining North Vietnamese harbors into which Soviet ships sail, by stepping up air and naval bombardments of other supply routes, by threatening other forms of military action against Soviet sea or air transports, the President has created an entirely new and possibly devastating dimension to the war.

The war is now perilously close to exploding beyond the geographic area of Southeast Asia. The war now—for the first time—involves a direct confrontation between the United States and the Soviet Union. The war now—for the first time—is clouded with the specter of possible battle between American and Soviet forces. The war now—for the first time—could be lunging toward a catastrophic world conflict.

The President of the United States—indifferent to this repeated past promises to end the war and ignoring the waves of despairing opposition by American citizens—is risking everything for negligible or illusory gain.

There is only one, significant "American interest" in Vietnam now: the lives of American personnel, including prisoners of war. When they are home—and the President has the authority, resources and influence to bring them home—there is no valid or moral reason to justify American involvement in the war for another minute or another dollar.

The continuation of a corrupt government in Saigon is not in the American interest, and does not justify the nightmarish risks the President is taking this week.

A blind allegiance to the myth that "America has never lost a war" is not in the American interest, and does not justify the risk of a catastrophic world war III. In fact, the removal of American forces from Vietnam will represent a victory for the American people.

The President's pique that the North Vietnamese did not play into his hands and his apparent pride in preserving his image as a tough adversary of communism are not in the American interest, and do not justify the continued and increased violence, destruction, and loss of life in Southeast Asia.

It is time for the United States to end its involvement in Vietnam and accept the fact that the Vietnamese must resolve their own struggle and conflict.

It is time—once again—for the American people, through peaceful protest, to get the message to the President that they expect the United States to act as the civilized nation we presume it to be.

It is time to realize fully that the President and the executive branch of the Government do not have the sole authority and responsibility for the life-and-death issues of war and peace.

It is time for the Congress to assert its responsibility and authority to end the war. I am now convinced that our legislative branch of Government is far more responsive to the will of the people on the issue of Vietnam than the President.

The Congress can and must exercise its authority to end American military involvement in Vietnam.

I support—and I implore Senators to support—an effort to cut off all funds for the war, with the single qualification that the lives of American personnel are protected and our prisoners of war are released.

## TRAGIC PROBLEM OF THE MISUSE OF DRUGS

Mr. TOWER. Mr. President, much has been written and spoken in recent months about the tragic problem of drugs in the United States. I, as many other Senators, have been active in legislative efforts both to curtail the amount of dangerous drugs in the country and to rehabilitate those who have become addicts.

We have all seen many statistics on the drug problem, statistics that are demanding action. However, as I was reading the May 5 edition of Life, I came across an article that made the problem crystal clear in a tragic sense. The article, entitled "Richie," tells the story of a young boy who became addicted to Seconal and the tragic day when his father had to shoot him in order to protect the rest of the family. I ask unanimous consent that the article be printed in the RECORD.

There being no objection, the article was ordered to be printed in the RECORD, as follows:

RICHIE

(By Thomas Thompson)

**This is the story of a terrible thing that happened between one decent man and the son he loved. It took place on a Sunday afternoon in a fine lemon-colored house on a maple-lined street hard in the middle of the American dream. The woman who was wife to the man and mother to the son could only stand by as an agonized witness.**

Seventeen years ago, on June 6, 1954, their first child, a son, was born to George Edward Diener and his wife, the former Carol Ring. They had been childhood sweethearts in Brooklyn on a row of houses which Carol remembers as "like the ones you see at the beginning of *All in the Family*." When people would ask later how they met, George Diener would grin, "I was lazy," he would always say. "I fell for the girl next door."

During their five-year courtship, Carol finished high school and became a receptionist on Wall Street. But George dropped out and joined the merchant marines at 16, hoping to catch a piece of the tail end of World War II. He sailed the seas for seven years before Carol suggested—firmly—that if he wanted her to marry him, he would have to settle down and stay at home.

Carol was petite and red-haired and willful, like her Scotch and English ancestors. She was proud of her family history and paid a genealogist to trace her line back to a 16th-century Norman Knight. George countered by tracing his line, which went back, he said, only as far as a saloon in Ridgewood, N.J. about 1916. Carol also joined the DAR and hung the membership certificate on the living room wall. Efficient and good with money, she paid the bills and kept up the cramped apartment they took in Queens.

George Diener was a muscular, compact fellow with thick and dark wavy hair. If you saw him in a bar, you would notice the U.S. flag tattoo on his strong arm, affixed there by a drunken tattooist in the Bowery when George was only 15. He had a Jimmy Cagney air about him. You would guess he had been a scrapper as a kid, maybe a welterweight boxer. He always seemed uneasy at rest. In conversations his eyes would dart about a room, his hands chopping the air. He was never one to sit at home on Sunday and watch the games. "I only like things that I can *do*," he would say. Much more to his liking was a hike in the woods or a day of target practice at an indoor pistol range. He was a good enough marksman to be rated expert.

They named their first son George, after his father, but to distinguish between the two, the child quickly became known by his middle name, Richard. Soon he was Richie. He was a fine son, with a lusty cry and bright red hair. George Diener adored him.

When Richie was 2, George's new job as salesman for a food company required him to travel each day the far reaches of Long Island, from Huntington to Orient Point, stopping in on hundreds of grocery stores and restaurants, persuading them to stock his brands of coffee, teas and spices. He longed to move his wife and son from the congestion of a city apartment out into the land. How could a man who had seen the sun turn the white cliffs of Dover gold at dawn, how could a man who had traded a carton of cigarettes to an Eskimo for six huge lobsters in Greenland raise his own boy on the anonymous floor of an apartment house?

There was no literature in George Diener's life, no poetry, not even great ambition. Like most men, he was willing to settle for ordinary drama: a woman, some money, a house with land that is owned, trees, work that does not paralyze the mind, recognition. And, above all, sons. A son is the mirror image, the blank piece of paper before our ink-blots soil it, the continuation of life. There is joy in a daughter, but there is power in a son.

George and Carol chose East Meadow in the heart of Nassau County, Long Island, once a place of potato farms but after World War II the definitive example of exploding suburbia. To the young couple who had grown up in Brooklyn, there was a delicious feel of newness about East Meadow. The houses were new and painted warm pastels, the people young and industrious and—like the Dieners—politically conservative. Policemen and firemen from the city were buying and moving in, and aircraft workers, and union men

who took off their hard hats and turned to pruning rose bushes. East Meadow was 98% white. The sea was near, near enough to catch a breeze in summer. There seemed to be a boat in every other driveway. And everybody agreed the schools were excellent.

They lived for five years in the first house, and when a second son, Russell, appeared, it was time to move to a larger one. George had always wanted a basement to store his tools and do his home carpentry. On Longfellow Avenue, they found just the house, with a spacious wooded backyard and room for a pool.

Carol remembers that Richie was never happy in the new house. "There was only one other little boy on the block, and he moved away, and there were only girls around then." Richie was chubby and hated it when the girls called him "Fatty." He took refuge, found friends, in animals. Carol had had a Boston terrier named Boots who died when Richie was very small. He loved the dog so much that she bought another one for him, which he also named Boots. There followed a skunk, a rabbit, a crow, hamsters, gerbils, fish, alligators, a coati, even a boa constrictor that grew to five feet and suddenly vanished within the house. It was never found.

George encouraged his son's interest in animals. The father had always preached reverence for any form of life. "George would not even let me step on a spider," said Carol. "He said spiders did more important work than people, and when I found one in the house I'd get Richie to pick it up and take it outside." When Richie wanted books on animals, his father bought them by the dozens. Richie became almost expert in animal diseases and he personally doctored all of his pets. The squirrels in his backyard would spring onto the new redwood deck and wait for their friend to feed them peanuts by hand when he got home from school.

Even when he lost his childhood fat and grew into a well-built lad of 5' 8", 145 pounds, with strong legs and a muscled chest, Richie had no interest in sports. George encouraged him to try wrestling. Carol suggested football and baseball. "But he always refused," his mother said. "He was so insecure. He told me that if he ever got on a team and made a mistake that caused his side to lose, he wouldn't be able to stand it."

Nevertheless, for the first 15 years of his life, Richie was a satisfying average boy, very much a part of George's ordered life. The father recognized Richie's insecurity—but what 15-year-old is secure, anyway? He accepted his son's preference for animals over human friends, tolerated his periods of moodiness, his silences, his middling grades, his occasional breaking of midnight curfew on Saturdays. None of these particularly alarmed his parents: they seemed the classic problems of any adolescent.

When the first real trouble appeared in the summer of 1970, it was therefore as startling as a crack of lightning on a clear night. Twice Richie had been away to summer camp, but on this, his third session, Carol received a long-distance telephone call. Richie had become disruptive and belligerent with the counselors. And he had been caught smoking marijuana. Could his father come immediately and get him?

On the long drive back from the Adirondacks, George questioned his son. Richie said it was only "the first, maybe the second time" he had ever tried grass. "All the kids were doing it," he said. "Some brought it up, and others found it growing wild in the woods." He promised never to use it again.

The next year, when Richie was a junior in high school, his grades tumbled. He took the nature books and animal pictures that used to decorate his room and put them in his closet. "This is what my son used to be," his father said one day to a visitor, pointing to the forgotten books. "And this is what he is now." His arm swept the room in bewilderment.

Richie had transformed his room into a lair of the counterculture. Ticket stubs from rock concerts were pinned to the window ledge. Black light cast an eerie glow on replicas of rock stars. A game called "Feds 'n Heads" was pinned to the wall. When Richie lay in bed, he could look directly ahead at several bizarre and frightening drawings, grotesque demons, creatures with bulging eyes, hair tossed by electrical storms, hands of reptiles. One such creature sat in a bathtub of blood, holding a dagger.

Richie had discovered a tiny space, some six feet long, behind a panel at the back of his closet. He put a cheap mattress in it and took to lying there to escape his parents' calls. George found the secret place in May 1971 and decided to dismantle it. He came across a small cube of something brown wrapped in aluminum foil, neatly hidden behind a picture. "What is this?" he demanded of his son. Richie answered that it was hashish he was keeping for a friend. Then he said it was only mud that somebody was passing off as hashish. Whatever, George threw it out.

Not long after, Carol found a sandwich bag full of marijuana in Richie's room and threw that out too. This time the boy freely admitted that it was his. Moreover he was furious at his mother for what she had done. Carol tried to discuss the matter with him calmly. If he opposed her cigarette smoking, why did he smoke marijuana?

"Because the other kids do," he would say, or "Because I want to, that's why," or, shyly, almost a mumble, "Because it helps me talk to girls." Carol found a book in his room, *How to Talk to Girls*. Richie was undeniably shy. His longtime friend Sue Bernstein, whom he had dated since he was 14, said it took Richie three years to get up the courage to kiss her goodnight.

When Richie turned 16, the changes came faster. Carol and George learned that he had become a heavy user of marijuana and hash—and more, though they would not discover this for some time. He began staying out until 2 a.m. on weekends, two hours past his curfew. He told his parents never to enter his room, and if they did, there would be a yelling row. He rarely joined them for dinner. "I'm just not hungry," he would say, but Carol could see the haunting red eyes and hear his tongue tripping over the words, new profane words, that rushed out of the boy who had been so quiet so long.

Richie now had friends, disturbing ones. He began running with an East Meadow boy who was on probation for using marijuana and who was suspected of dealing in heroin. Ironically, Carol learned, Richie had met the boy on a Methodist Church retreat. For a time, Richie had been active in church, and he had been confirmed when he was 15. The new friend, whom we will call Eddie, tried to interest Richie in heroin. Apparently he refused. "Richie said he wasn't going to stick any needle in his body. No way," said one of the friends.

George discovered that he now could not talk to Richie without yelling at him, and the boy yelled back. When George ordered him not to see Eddie, and to be home at a certain hour, and to stop using foul language, Richie disobeyed every order. Finally George took his son to Family Court and charged him with being incorrigible. "I don't want him to have a police record, but he's only 16 and all the proceedings are secret," he told Carol. After the session in court, Richie suddenly changed. He found a summer job at Burger King and began saving money to buy a car. George Diener informed the court of his son's improvement and the case was dismissed.

Last October, a severe case of bronchitis developed into pneumonia and Richie stayed home from school for three weeks. He fell behind. He failed *every* subject the first quarter. Carol was upset because on his Scholastic Aptitude Tests for college he had scored well. When Richie returned to class in November, Carol received a call from the assistant principal. Richie was ill. Could she come and pick him up?

When Carol arrived at the assistant principal's office, Richie "was very talkative, his eyes were red and heavy. He was abusive," she told George that night. "He cursed me and everybody else." Carol talked privately that morning with the nurse. "Richie told me he took some pills on the school bus, but he insisted they were pills the doctor gave him for pneumonia," the nurse said. But her voice was skeptical.

"Do you think it was something else?" Carol asked. The nurse nodded.

The "something else" was Seconal. The kids called them "downs" or "goofers" or "reds." With all the horror stories about heroin and speed, somehow Seconal has not received much attention. It is a powerful barbiturate, a mental depressant used as a sleeping pill. Tens of millions are manufactured every year in America. Marilyn Monroe died from an overdose of them. So have countless others. In the late 1960s, kids discovered that Seconals produced a quick and curious feeling, an hour of dreamy lethargy.

"If you become dependent upon Seconals," explains one New York doctor, "you actually need the drug to function, just as an alcoholic needs a drink first thing in the morning. Without Seconal, a dependent person becomes nervous, jittery, agitated. Withdrawal from Seconal is more severe than withdrawal from heroin." Because Seconal is a depressant which interferes with nervous transmissions from the central nervous system, it can so affect the brain's functions that one can become hostile and aggressive.

The market for Seconal thrives, particularly in high schools. A Nassau County narcotics officer said that the dangerous pills can be bought in the corridors or bathrooms or lunchrooms of "any school in this district, including parochial ones." They sell for prices ranging from 25 cents each to three for a dollar. "The kids like them because they are cheap, clean—no needles—and plentiful," said the New York doctor. "They don't think they are addictive. But God, are they ever. They don't think they are dangerous. I wish word could get around that at least six Long Island kids have died in the past year from Seconal abuse."

Last autumn, Richie began using Seconal heavily. He told one girl that he had a bottle of 100 pills, that he was tempted to sell them, but he thought he would keep them for his own use. "Why don't you stop doing drugs?" said the girl. "I can," answered Richie. "Anytime I want. I just don't want to stop right now."

No one could say for certain why Richie became so deeply involved with drugs. One "perhaps" was his being thrown into a massive high school with 3,000 students and wanting desperately to be accepted. When a shy, socially insecure youngster discovers that drug use will admit him to at least one circle, however pathetic that circle may be, the temptation can be great.

There were other signs that Richie was pleading, in his way, for status and friendships. He became an expert on rock music, not the standard Fillmore East pop groups, but obscure ones which Richie would "discover" and tell his friends about. He fretted constantly about his appearance. He took at least two showers a day and his clothes had to be clean and freshly pressed. Detesting his tight, curly red hair, Richie spent hours in front of the mirror attacking it. Finally he went to a barber and had it straightened. "Now it looks like a Brillo soap pad," he said in despair. He announced he was going to grow an Afro, which did not please his father.

His childhood nickname of "Fatty" was replaced by the time he was 17 with a new one, "The Kid." He hated this name so much that he once bloodied a friend's nose for calling him that. But when the fight was over, he

invited the friend to come by his house anytime and listen to music. He told all his friends that. "Whenever the light in my room is on, that means come on in, he said. "I really mean it."

There were many signs that Richie was not totally comfortable in the drug world. He very carefully divided his friends into "straights" and "heads" and he never mingled the two. One of the straights, a boy who did not use drugs or even smoke pot, described this period of Richie's life: "We all knew Richie was doing drugs—a really heavy pill scene—but he'd never bring anything with him when he went out with us. He wouldn't take the chance of getting us busted along with him. I think he respected our way of life."

Once last summer Richie had arrived at Jones Beach with a group of "heads." A hundred yards away were two couples who were "straights." Richie waved at the couples, then started walking toward them. But midway he stopped. He glanced back at his "head" friends, then looked forward toward the others. Finally he sat down on a dune mid-distance between them, not able to commit to either side.

By Christmas last, the rupture between George and his son became complete. They passed each other silently in the house. Occasionally anger would flash and they raged at one another. But George had decided that he could no longer deal with Richie. Perhaps Carol could achieve something. As long as she talked to the boy quietly, gently, he would listen. And promise. And go out and break his promise.

Late at night, George and Carol would lie in bed and search their lives for reasons. Carol assured her husband that it was not his fault. He had tried in his brusque, do-as-I-say way to interest Richie in scuba diving or in becoming a marine biologist. "What did I do wrong?" George would say, not content with his wife's murmurings. "What did I do wrong?" He had build up the walls of his life so that he knew exactly who he was, what he believed and where he belonged. That his son had no ambition, that his son lay in his room listening to loud music with confusing lyrics, that his son had covered his boyish face with a scraggly red beard and long shaggy red sideburns and was letting his hair grow in the directions of a windstorm was more than he could understand.

George was growing more and more politically conservative. He grouched often about welfare abuses, a "no-win" policy in Vietnam, and how " 'liberal' to me is a dirty word." It was not difficult for him to affix part of the blame for Richie's troubles on these villains. "It's this permissive liberalism," he told Carol. "The kids do just what they want because they know the courts won't punish them." Indeed, there had recently been a large narcotics raid on a house in the neighborhood which involved several arrests. But, George raged, "the pushers were back on the streets the next day." Carol agreed. She also felt Richie's school was partly to blame. "He has *three* free periods to do just what he wants," she said. "He can leave the campus or buy drugs or go into the bathroom and smoke pot. The teachers are afraid to go to the bathroom because they know what's going on in there."

On Christmas Eve, Richie was in his room and Carol went to call him. The house was full of relatives and it was time to open gifts. She opened his door and the smoke of marijuana assaulted her. "Put that out immediately," she said. "Everybody is waiting for you so we can open the presents." Richie shook his head. He would not join the family celebration. "I think he was so possessed of guilt," Carol told George later, "that he couldn't bear to face all those people who loved him. He couldn't let them see him stoned."

George Diener's ordinary dreams were being menaced in other areas. The taxes on his house had originally been $300 a year. Now, in less than seven years, they had quadrupled. Even though George and Carol together earned $15,000 a year, there was rarely enough money for an evening out. Carol liked good restaurants, but the best George could normally do was hamburgers at McDonald's. Crime seemed to be encircling him. The house across the street was robbed, then one behind him, finally his own—in broad daylight. Because he worked part-time as a night security guard, George had a police permit for two pistols. One of them was taken by the afternoon burglar and the house was ransacked. Even though many of the parents in the Dieners' circle of friends knew their own children were using drugs, it was rarely discussed. Perhaps it should have been. District Attorney William Cahn publicly estimated that 75% of the youth in his county had at least experimented with marijuana and/or pills.

George worked ten hours at one job and often at another, he coached Little League baseball and was a committeeman with the Boy Scouts, but he had to come home from labor and civic endeavor to discover his own son stoned and red-eyed and mute. "Jesus, God in Heaven, what's happening to us?" he would cry.

During one of their flashes of anger which was the only way they communicated anymore, George grew so exasperated that he snapped to Richie, "All right son, you believe in the law of the streets. You believe strong is best. Put up your dukes."

Richie looked at his father in surprise: his hands were closed into fists. Richie picked up a piece of chain to defend himself. George, perhaps remembering his own Brooklyn street days, perhaps thinking he could "slap some sense into the boy," threw a roundhouse punch at his son. It exploded on his cheek. For days Richie had an angry, swollen bruise on his face. Later George apologized, but Richie did not accept it.

George began to suspect that his son was not only using drugs but selling them. He told Carol that the only way to find out for sure was to tap the family telephone. If his suspicions were true, he wanted to stop the business before it grew larger. Carol was reluctant at first—"How can we spy on our own child?" she said—but George insisted. He installed the bug secretly, but Richie found out and told his friends.

One girl friend remembers those days: "I'd call up Richie and I'd start off the conversation by saying, 'Hi there Mr. Diener,' or 'Hello, Tape,' and we'd talk in code so he couldn't dig anything anyway."

But before Richie discovered the tap, George heard things that staggered him. His son seemed a budding expert at the art of "ripping off." The boy's telephone conversations with friends were peppered with requests to "front me," which George learned was a plea for enough money to buy, say, a half pound of marijuana which might cost as much as $100. Richie then broke it down into "nickels" and "dimes"—$5 and $10 sandwich bags—and sold it. Usually he sold an ounce that was either short-weighted or mixed with oregano.

George and Carol's younger son Russell was taking medication prescribed by a doctor, and Richie bragged on the telephone of stealing some of the pills and selling them to friends. He told one girl that his customers were "dumb kids, like only 13."

George also heard, on the tapped phone, that Richie was developing enemies who had discovered they were being cheated. "Richie told one contact that he was unable to sell a big batch of marijuana because he had ripped off so many customers that nobody trusted him anymore," George told Carol. "He says that people are out to get him, but he isn't worried because he will shoot them. Or stab them."

The police of Nassau County knew Richie was a marijuana user, but they did not know he was a large-scale dealer. "The pattern is typical," said one narcotics officer. "If a kid gets some grass, he sells it to friends at small profit and keeps his own use going. A lot of kids even *give* it away. It seems to be an element of social status, of making and keeping friends."

One day toward the end of 1971, Richie came home stoned, his eyes red, his speech fast but slurred. George challenged him once more. "I have done everything I know to do," said the father. "I have tried to reason with you, I have forbid you to see kids who take dope. I have asked you to stay home, I have taken you to Family Court, I have cried, I have told you I loved you, I have told you I'll do anything in my power to find you help. Your mother and I cannot talk to you anymore. So this is the way it's going to be. You're going to stay home Friday and Saturday nights if I have to lock you in your room."

Richie made a counterproposition. "I promise to stop doing drugs," he said slowly, "I really do promise . . . if, IF you'll let me go out with kids on weekends and drink beer."

George answered quickly. "As much as I want you to stop taking drugs, I can't bargain with you. You're only 17, and I can't give you permission to go out and drink."

Richie began to yell. He shouted, as children so often do, "You don't love me! You don't understand me!"

"Of course we love you," Carol put in softly.

"You never even wanted me," Richie raged "The only reason I'm here is that you two were fooling around one night. I didn't ask to be born."

George blew up. He hit his son in the mouth and blood gushed out. Richie took the blood from his mouth and flung it against the wall of the living room. While George watched the blood trickle down, Richie rushed out into the night.

Once again, George Diener took his son to Family Court, and this time Richie endured two sessions with a psychological counselor. After the second meeting, the counselor told Carol that he was going on a two-week vacation and when he returned, he would resume his work with Richie. "When the counselor returned," said Carol, "he called me and said he had been promoted, that another man would take over Richie's case. This new man would call me and make an appointment. I never heard from them again."

On Feb. 12, a Sunday, Richie was in a Walgreen's drugstore at the huge Roosevelt Field Shopping Center. The manager noticed him loitering near the drug counter and suspected him of shoplifting. He told Richie that he would have to stay until the police came to investigate. A punch-up occurred in which, according to the manager, Richie threw a display basket and a wooden table at him, tried to choke him with his necktie, and kicked him in the knee. The manager charged Richie with assault and a trial was set for Feb. 28. It was Richie's first arrest.

Two days later, Valentine's Day, George was working at home. The school called. Richie had been expelled for fighting and cursing at a teacher. George waited for his son to come home. He dreaded the confrontation. Richie pulled up in front of the house with a carload of friends. They noticed George's car in the driveway and hurriedly sped on. George knew that they would not come in with him as long as he was there, so he got into his car and drove away. Some time later he circled back and, sure enough, the boys were inside the house. George made a decision. He telephoned the police and asked them to raid his own son's room. "I thought that maybe if Richie was arrested, it would scare him out of it," he told Carol later.

When the police arrived and searched the room, there was no marijuana. The boys were only drinking. After the police had left, and after George had ordered the boys out, Richie began to scream at his father. George yelled back. It was the same ground they had gone over a hundred times before. Only this time Richie seized a pair of scissors (gold ones which his mother had once used to make elaborate Halloween costumes for him) and threatened to kill his father.

George checked his clenched fists and left the house. Richie called his mother at the junior high school where she worked in the cafeteria and sobbed into the telephone. "I must be crazy," he said. "I just tried to kill my father." Carol's mind raced. She figured this, at last, was Richie's cry for help. "You're not sick," she said. "You're just tired. Lie down on your bed and rest and I'll come home."

She telephoned a relative who put her in touch with a community health psychiatrist. The psychiatrist gave Richie a preliminary "screening" and told Carol that, yes, he would take the case, but that he would have to wait until the Walgreen incident was disposed of in court. Since that trial was only two weeks off, Carol felt the delay could be borne.

Toward the end of the week Richie had a conference with the principal of East Meadow High. If Richie agreed to stop using drugs and stop cutting classes he could come back on probation.

"The next week was almost miraculous," according to Carol. "Richie was a changed boy. He stayed in at night. He did his homework. He was sweet to me. He was our boy again. I think he realized this was his last chance. That Friday afternoon—I would learn later—a big shipment of drugs hit the school. Richie bought some pills. A lunchroom lady spotted him and some other kids and told them she was turning in their names to the office. Richie probably felt this was the end."

On Friday night, Feb. 25, Richie went to a Long Island bar called Ryan's which is popular with young people. In New York State, the legal drinking age is 18. Police raided Ryan's that night and checked ID cards. Richie had none. He and a few others were taken to the police station, questioned and released. This was Richie's second arrest.

On Saturday, Richie, oddly mute and peaceful, asked his mother to drive him to a girl friend's house. She agreed. Four hours later when he returned home, Carol suspected he had been smoking marijuana. But he said nothing. That night, Richie and two friends, two "straight" friends, went out and—for a few happy hours—played in the snow.

The next noon, Richie asked his mother if he could borrow the car. Carol has forbidden him use of the car but, as she remembers: "He had been acting so nice all week that I gave in. In fact, I made a bargain with him. 'If you stay this way,' I said, 'I'll give you my old car rather than trading it in on a new one as I had planned. You'll have to find a job to pay for the insurance.'" Carol watched as Richie happily left. She had always "lived with hope." She thought her lectures were getting through to him. Maybe.

Richie and a friend went to a local hamburger shop. As they left, Richie backed his mother's car into another one. There was negligible damage to both, but the other car's owner telephoned George and Carol. Assured that their son was not hurt, they waited for him to come home with an explanation. Richie had taken some Seconals. He pushed the car up to 60 mph on a quiet residential street in his neighborhood. Suddenly a tire blew out and the car bounced across the street, hit a station wagon, careened into a yard and knocked down a fence. Neither Richie nor his friend was hurt, but the car was destroyed.

George was summoned to the scene, and he told his son they would discuss the accident later. Richie went home while George stayed to discuss insurance matters with the police.

At 4 p.m. George and Carol sat down at the dining room table with Richie to talk about the accident. Carol had told George that it must be a calm meeting with no raised voices. But Richie seemed strangely remorseless. "You don't act the least bit sorry;" said Carol. Finally she spoke sharply. "Don't you realize you just totaled my car? Besides that, you could have killed somebody! You could have killed yourself!"

Richie raised his head and looked through the glass patio door to the yard. "Maybe that would have been even better," he said softly.

George remained silent during the dialogue. But he was shaking his head sadly. Richie noticed this. "That's right," the boy shouted, "shake your f—ing head."

Trying to avoid another scene, George rose and left. He went to his basement shop and began working on his salesman samples, sorting out broken packages and returns.

Richie and his mother continued to talk, but the boy kept jumping up and making telephone calls. Finally Richie went into his room, flipped on a rock tape, and shut the door. Carol took her younger son to a bowling alley and returned half an hour later. Richie came out of his room and his mother gasped. He was staggering. His eyes were red slits. He slurred his words. "What in God's name have you taken?" she cried. He confessed that he had taken four Seconals.

Ignoring her, Richie made a date on the telephone with a friend for 6:30. He hung up and shouted at Carol. "And don't go down in my room when I'm gone and look for pot."

"You're in no condition to go anywhere," said Carol. Richie began to walk past her. Suddenly he fell over a chair and onto the floor.

The two crashes—boy and chair—brought George racing up from the basement. Now Richie was standing up. He saw his father. "Did you tell the cops at the accident scene that I was on dope?" he cried.

George did not want to talk to the boy in this condition. He turned without speaking and started out. Richie ran after him. "Answer me! Answer me! I asked you a f---ing question," the boy shrieked, "and I want a f---ing answer!"

Richie's face was so contorted, his body so quivering with rage that George felt he and his wife were in physical danger, the kind that could not be handled with parental authority or even with fists. This was the last scene of the long painful drama and all the emotions were out. All reason was gone.

George went to his bedroom to get his pistol. The .32 was hidden behind a night stand. Weeks before, Carol had urged George to conceal it. She had been afraid that Richie would find the gun in a heated moment and use it on them as they slept. On the taped telephone calls, George had heard his son brag of being ready to shoot or stab any dissatisfied customer who was out to get him. And more than once Richie had shouted at George, "I'll get you . . ."

George tucked the .32 into his belt. He walked down the stairs into the basement.

Richie appeared on the stairs leading to the cellar. Unsteadily he made his way down. He saw an ice pick on a work bench and picked it up. When he was 15 feet from his father, Richie raised it and cried, once more, "I want an answer! Answer me!"

George's answer was to take the gun from his belt and to point it at his first-born son. Perhaps this would frighten him. Perhaps this would send him away.

Richie threw out his arms like a crucifix. "You've got your f---ing gun. Go ahead and use it." The boy walked slowly toward his father. When he was five feet away, the ice pick trembling in his hand, George cocked the .32. Richie stopped and flung out his arms once more, "Go ahead. . . . Shoot!"

Richie dropped his arms and somehow the ice pick fell to the floor. George lunged forward, grabbed his son by both shoulders, and kicked the ice pick into a corner. Carol had appeared by this time, paralyzed with fear. Richie broke loose from his father and rushed upstairs, shouting behind him, "I'm going up to get the scissors." He rushed past his mother. "Oh my God! What can we do?" Carol moaned.

"I don't know," George answered. "Maybe he won't come back down."

While they waited in the cellar, George and Carol could hear Richie rummaging in the kitchen above their heads. He pulled out a drawer too far and it crashed to the floor, utensils rattling about like hailstones on a metal roof.

Instantly the boy appeared at the head of the stairs with a steak knife in his raised hand. George pushed his wife behind him and faced his son. With each step he took down the stairs, Richie cried, "Shoot! Use your gun!"

George's finger trembled on the trigger. The frustrations of his life were suddenly telescoped. His seed had produced a son, but the son was no longer his. The son was a million miles away. The son was a childman with a beard, with a knife, with obscenities on his lips, with drugs in his brain.

What God spared Abraham from doing to Isaac, what the makers of myth and literature could scarcely even imagine, George Diener at last did.

He fired.

The bullet tore directly into Richie's heart. He slumped backward onto the stair in a sitting position. He brought his young hands to his chest and he saw his blood. He was puzzled. He stood straight up and raised the knife again. Now its handle was soaked with the life draining from him.

Incredibly, George Diener fired again. This time the bullet went wide, screaming past his son and ripping a hole in the wall of the house that had been George's dream.

Richie sat down and toppled forward, down the stairs, onto the cement floor.

George grabbed Carol and pushed her up the stairs to the living room. He called the police and an emergency ambulance number.

He went back downstairs. Richie was quiet. He was not moving. George touched his throat. There was no pulse.

Slowly he dragged himself up the stairs.

George went to his wife and knelt beside her chair. "He's dead. I've killed our son. Can you ever forgive me?"

Then they sat and cried and waited for the police.

Several things quickly happened.

They carried out Richie's body in a canvas sack. An autopsy disclosed that his vital organs contained six times the amount of Seconal given by doctors in a therapeutic dose.

George was arrested and charged with murder, but he pleaded self-defense and the grand jury did not indict him. The police did want to know why George, an expert marksman shot to kill, rather than to wound. "All I could think of was that if I only wounded the boy, he would come back and kill Carol and me," he answered. "There had been so many threats."

George vowed to lead a community war against drugs, in particular barbiturates.

The night before the funeral, many of Richie's friends went to the funeral home to pay their respects. George thanked most of them for coming, although he would not even speak to some he considered part of Richie's "head" crowd. In particular Eddie, who was sobbing almost hysterically. Carol was shocked to see that more than one of

the young mourners came to the funeral parlor stoned.

When Richie's friends looked at him in the casket, they were stunned to see that his beard had been shaved off, his sideburns trimmed and raised, his hair neatly, forever cut. Sue Bernstein, his longtime friend, said that Richie looked "exactly the way he looked when I first met him, when he was 14, before the trouble started."

There was criticism of the barbering, but George dismissed it. "This is the way I wanted Richie to look," he said. And the father, at last, had his way.

Lately George has taken to going into Richie's room and shutting the door and stretching out on the bed. It is his way of getting through one sleepless midnight. There are others to come.

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## ENACTMENT OF S. 2467, NATURAL GAS ACT AMENDMENTS

Mr. COOK. Mr. President, I have long been concerned about the supply of energy resources available to meet our ever increasing requirements. In many instances industrial growth is being curtailed by the inability of our utilities to supply new customers with gas and to increase the supply to customers now on the line. New homes are having to use fuel other than gas at significantly higher costs. In Kentucky, a typical six-room house can be heated with gas for $108; it costs $189 with oil. Thus, the shortage is hurting the small consumer; even with a 25–50 percent increase in price of gas in the field, he is much better off with gas.

I repeat: This is not a next year's problem but a problem that is with us today. We are short of gas today to meet legitimate needs. This condition deteriorates daily.

On March 21, 1972, I placed in the RECORD a letter I had sent to the Chairman of the Federal Power Commission concerning the natural gas shortage and the effect this shortage is having on the State of Kentucky. I requested Mr. Nassikas to inform me of the actions being taken by the FPC to solve this problem and offered to support the development of any reasonable solution.

I have received two letters from the FPC which outline their programs in this regard. Because of the interest that the Congress has taken in this issue, I ask unanimous consent that these letters be printed in the RECORD at the conclusion of my remarks. I believe that action is being taken by this Commission to provide answers to this vital problem. I do not conclude that the problem has been solved. Other actions, including action by this Congress, is urgently needed.

I am in full support of the recent action taken to encourage the development of new gas from domestic sources. I refer to the FPC proposal issued April 6, 1972, known as rulemaking 441 establishing an optional procedure for certificating new producer sales of natural gas. Recent press accounts have indicated that certain Members of Congress view this action as sudden and total deregulation which could only raise havoc. I do not consider this action to be deregulation but rather a regulatory agency's response to reality. The FPC has in previous years repeatedly cut the field price of gas directly in the face of alarming supply-demand trends. The present Commission is faced with the difficult task of raising prices so as to encourage development of gas supplies needed to meet consumer needs and other national goals in the most timely and economic manner. R–441 is a procedural mechanism for FPC to allow higher prices for new gas supplies. FPC retains control as to whether it will allow the contract price.

Recent testimony before the Senate Interior and Commerce Committees supports the fact that the natural gas shortage is real and serious. The record shows that the major pipelines serving the Nation east of the Mississippi River obtain the bulk of their supplies in the southern Louisiana-Texas area. These pipelines need 50–60 trillion feet of new reserves in the next 8 years. This is a staggering amount of new reserves from this one area. Without these new reserves, deliveries to the eastern part of the United States will decline sharply. The consequent adverse impact of this crisis on our Nation's enviromental and economic goals is significant. This testimony is overwhelming in its evidence that there is a requirement to encourage the producer to develop our resource base of potential supplies. Higher field prices would encourage this development. What the FPC has proposed is a mechanism to permit, in the proper cases, higher prices. I urge Senators to study the record before taking action to require the FPC to withdraw its proposal at R–441.

Press reports also indicate that certain Members of Congress have expressed concern that the increase in field price will eventually result in higher prices without any assurance of new supplies being discovered. I must agree that there is no "assurance" of new supplies but I submit that in my opinion the margin for success will be enhanced significantly. Only until new gas reserves are found and dedicated, are higher prices paid.

I am greatly concerned over any increase in price which must be borne by the consumer. But, we must face the facts. Because of inflation and because the search for new reserves is more costly, the price of gas will rise. We cannot change economics. However, the increase caused by R–441 will be reflected in new gas contracts only and will not affect existing producer contracts sanctioned by the FPC prior to April 6, 1972. To offset this short-term price differential, I believe that more realistic field price levels will encourage development of this domestic potential at prices considerably lower than those resulting from the importation of liquid natural gas, or synthetic pipeline gas from foreign feedstocks as was authorized recently by the FPC. In the final analysis, there is every indication that in the long run the consumer will benefit from a more realistic price for a more reliable product. In my State of Kentucky, because of the shortage of gas, we have been forced to deny some industrial expansion and thereby incurred the loss of new construction as well as the jobs this expansion would have provided. This, to me, is anticonsumer and cannot be tolerated.

Mr. President, the hue and cry by some Senators seems to me most strange since the same issues are before the Congress in substantially the same form with substantial support. I refer to sanctity-of-contract legislation in general and to S. 2467, of which I am a cosponsor, in particular. I believe that the enactment of the bill would render the rulemaking, proposed by the FPC, unnecessary and would in effect supplant it, as both actions are designed to accomplish the same purpose. The FPC proposal (R–441) sets out an optional certificate procedure which would be available to gas producers under contract dates on or after April 6, 1972. The FPC would be allowed to approve a contract rate higher than the applicable area rate upon finding that the contract is required by the public convenience and necessity. The Commission would be prohibited from adjusting or changing the terms of such contracts once they had been approved. Inasmuch as such matters are fully detailed in S. 2467, its enactment would supersede and obviate entirely the need for R–441.

Thus I say to Congress: Let us get on with this legislation. In this manner the will of Congress can be expressed.

There being no objection, the letters were ordered to be printed in the RECORD, as follows:

FEDERAL POWER COMMISSION,
*Washington, D.C., April 6, 1972.*

Hon. MARLOW W. COOK,
*U.S. Senate,*
*Washington, D.C.*

DEAR SENATOR COOK: Your letter of March 17, 1972, extending your offer of support in the development of reasonable solutions to critical shortage of natural gas is greatly appreciated. The comments of Mr. Moran and Mr. Murray once again emphasize the impact which this growing supply shortage is having on the social and industrial development of the United States.

There is no single, simple, easy answer to the underlying cause, or causes, of the deteriorating gas supply situation over the past decade. Because of the inherent premium qualities which natural gas possesses as a fuel, there have been great increases in demand over the past decade, while at the same time there has been a pronounced decline in exploration and development for natural gas. There can be little doubt that this decline in exploration activities has been related at least in part to FPC's imposed ceiling prices in the decade of the 1960's. This has led to inadequate capital formation and the flow of the limited capital available to other more attractive alternative investment opportunities for the gas producer. It has only been within the past two and one-half years that a concerted effort has been made by the Federal Power Commission to consider the multiplicity of other factors rather than just utility costing concepts in establishing FPC ceiling prices. These include consideration of supply and demand, capital requirements, market conditions and other principles of economic costing.

However, the Federal Power Commission's ceiling price regulation is not the only element which affects the exploration and development rate for natural gas. Other factors, under control of various government agencies and Congress, include inflationary pressure, national energy import policies, international monetary considerations and national policies, tax policies and other considerations.

The Federal Power Commission has, for more than two years, been engaged in an

active program to stimulate additional exploration and development of natural gas reserves in the United States and their dedication to the interstate market. It has undertaken a number of regulatory actions, some of which are briefly outlined below, which I feel are pointed in the right direction for effective producer regulation, which is consistent both with providing a fair return on investment to the producer and assuring adequate gas supplies to the consumer at a reasonable cost. The Commission has:

(1) Conducted a nationwide investigation to review existing rates and determine whether higher rates should be established for future supplies of natural gas dedicated to the interstate market.

(2) Established rates for major producing areas, resulting in increased price ceilings and periodic escalations to encourage increased exploration and development of gas. Other incentives including increased prices and the option to "write off" refund obligations in proportion to their dedication of new gas reserves to the interstate market has been given to producers in area rate decisions for the Texas Gulf Coast and Southern Louisiana areas. Our major area rate decisions are on appeal to various Federal Courts.

(3) Applied the area rate pricing principle to pipeline company producers of natural gas so that they would have increased incentives to develop their own gas reserves.

(4) Instituted rulemaking and policy determination to stimulate the search for gas by producers and pipeline companies in reservoirs which underlie acreage already committed to the interstate market.

(5) Granted blanket certificates to small producers to exempt them from ceiling prices and allowed them to make sales without obtaining FPC authorization, as an incentive to increase gas service and reduce the time required to provide gas to the interstate system, as well as to ease the entry of small producers into the gas production business, thus increasing competition.

(6) Established new procedures allowing producer rates to be determined by rulemaking procedures in lieu of the more lengthy formal proceedings.

(7) Accepted for consideration applications by independent producers requesting issuance of a certificate for sales of natural gas, notwithstanding that the proposed rates may be in excess of the ceiling or guideline rates.

(8) Established accounting rules for advance payments and loans to producers by pipeline to stimulate further exploration and development. The United States Court of Appeals for the District of Columbia Circuit approved the Federal Power Commission's order on March 29, 1972.

(9) Required filing of curtailment plans by pipeline for priority allocation among customers if supply is deficient.

(10) Encouraged lease sales in the Outer Continental Shelf and senior staff personnel testified in support of such Federal oil and gas lease sales.

(11) Undertaken, with Congressional authorization, a National Gas Survey to investigate the supply-demand-price relationships of natural gas including independent determination of reserves and overall evaluation of natural gas in meeting United States energy requirements. This Survey is being conducted to enhance the Commission's ability to regulate the gas industry so that a continuing and reliable supply of gas will be available to meet consumer needs.

(12) Our most recent order proposing, to establish by rulemaking, an Optional Procedure for Certificating New Producer Sales of Natural Gas, issued April 6, 1972.

As the foregoing rather lengthy list of Federal Power Commission actions indicate, the Commission does have a positive program for correcting the supply-demand imbalance which now exists in the natural gas industry. Because of the lead time required for exploration and development prior to the flow of significant quantities of gas to the interstate market, the downward trends of a decade or more cannot be immediately reversed. However, with public awareness as evidenced by the letters from your constituents, and support for a constructive regulatory program from leaders of the Senate, we feel that we will be able to develop a regulatory pattern which will provide incentives for increased exploration and development of natural gas to provide the consumer with an adequate supply at the lowest reasonable cost.

Sincerely,

JOHN N. NASSIKAS,
*Chairman.*

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[United States of America
Federal Power Commission]

(18 CFR 2.75)

NOTICE OF PROPOSED RULEMAKING AND STATEMENT OF POLICY RELATING TO OPTIONAL PROCEDURE FOR CERTIFICATING NEW PRODUCER SALES OF NATURAL GAS

(Issued April 6, 1972)

1. Pursuant to 5 U.S.C. 551, *et seq.* Supp. V, (1967) and Sections 4, 5, 7, 8, 15, and 16 of the Natural Gas Act (52 Stat. 822, 823, 824, 825, 829, 830; 56 Stat. 83, 84; 61 Stat. 459; 76 Stat. 72; 15 U.S.C. 717c, 717d, 717f, 717g, 717n, 717o), the Commission gives notice that it will consider adopting rules and regulations providing an alternate method under which it will consider the issuance of permanent certificates for, and will otherwise regulate, new sales of natural gas subject to the Commission's jurisdiction. Current procedures for issuing permanent certificates for new sales of natural gas are:

DOCKET NO. R-441—(A) PURSUANT TO AREA RATE ORDERS [1] OR, IN THE ALTERNATIVE (B) PURSUANT TO SPECIAL CERTIFICATION PROCEDURES

| Area | Docket No. | Opinion No. | FPC | Date | Court cite |
|---|---|---|---|---|---|
| Area rate orders: | | | | | |
| Permian Basin | AR61-1 | 447 | 33 FPC 43 | Jan. 12, 1965 | 375 F.2d35 (1967). |
| do | AR61-1 | 468 | 34 FPC 159 | Aug. 5, 1965 | 390 U.S. 747 (1968). |
| do | AR61-1 | 468-A, 546 | 34 FPC 1068 | Oct. 4, 1965 | 428 F.2d 407 (1970). |
| Hugoton-Anadarko (incentive price policy) | AR64-1 | 567 | 42 FPC 726 | Oct. 3, 1969 | |
| Hugoton-Anadarko | AR64-1 | 586 | 44 FPC 761 | Sept. 18, 1970 | USCA9 No. 71-1036. |
| Texas Gulf Coast | AR64-2 | 595 | 45 FPC | May 6, 1971 | USCA5 No. 71-3061 et al. |
| Southern Louisiana | AR64-2 | 595-A | 46 FPC | Oct. 18, 1971 | USCA5 No. 71-2761 et al. |
| | AR61-2 | 598 | 46 FPC | July 16, 1971 | |
| Other Southwest | AR61-2 | 598-A | 46 FPC | Sept. 9, 1971 | |
| | AR67-1 | 607 | 46 FPC | Oct. 29, 1971 | USCA5 No. 72-1114 et al. |
| | AR67-1 | 607-A | 47 FPC | Jan. 17, 1972 | |
| | | Order No. | | | |
| Appalachian-Illinois | R-371 | 411 | 44 FPC 1112 | Oct. 2, 1970 | |
| | R-371 | 411-A | 44 FPC 1334 | Oct. 30, 1970 | |
| | R-371 | 411-B | 44 FPC 1487 | Mar. 27, 1970 | |
| Nationwide gas rates | R-389 | | 35 FR 10152 | June 20, 1970 | |
| | R-389A | | 35 FR 11638 | July 17, 1970 | |
| Adequacy of supply | R-418 | 431 | 36 FR 7505 | Apr. 21, 1971 | |
| Rocky Mountain Area | R-389A | 435 | FPC | July 15, 1971 | CACD No. 71-1812. |

DOCKET NO. R-441

Nothing herein is intended to supersede the procedures set forth in A, *supra*. If adopted, with or without modification, the alternate method proposed herein would supplement the procedures set forth in B, *supra*. Nothing in this Notice shall affect any certificate or proceeding completed, pending, or hereinafter initiated pursuant to (A) or (B), *supra*, or affect the operation of Orders 402, 402A (18 C.F.R. 2.68, May 6, 1970 and June 3, 1970), or our Regulations 157.22 and 157.29.

2. Jurisdictional pipelines are presently unable to procure contracts for new supplies of gas, on a spot or long-term basis, in sufficient quantities to insure that consumers of natural gas will receive a reliable and adequate supply of gas. Interstate pipelines are unable, in many instances, to provide service to new customers, and some major interstate pipelines are, at this time, being forced to curtail deliveries of natural gas below their contractual commitment and are unable to supply to quantities requested by their customers because of insufficient supplies. Such disruptions of service create an intolerable situation for human needs customers dependent on the interstate pipelines. Prolonged curtailment of industrial sales of natural gas until industry can switch to alternate fuels, and continued non-expansability of gas utility service, will inevitably have a repressive effect on the productivity of the Nation's economy. On the basis of certificate filings, at the present gas from foreign imports or non-conventional sources have been offered only at high cost to the consuming public.

3. The recent report on "National Supply and Demand 1971–1990," prepared by the Federal Power Commission's Bureau of Natural Gas (BNG) shows the level of "unsatisfied demand" for gas increasing from 3.6 trillion cubic feet in 1975 to 9.5 trillion feet in 1985 and 17.1 trillion cubic feet in 1990.[3] Additionally, it is estimated that between 1971 and 1990, the United States will require 186.4 trillion cubic feet more gas than will be available, even after making liberal allowances for pipeline imports, Alaskan gas and reformed gas.[4]

4. The Future Requirements Committee (FRC) estimates that the natural gas requirements for the United States will in-

[3] *National Gas Supply and Demand 1971–1990*, and Bureau of Natural Gas, Federal Power Commission, February 1972, p. 3.
[4] *Ibid.*, p. 3.

crease from about 28.2 trillion cubic feet in 1971 to 33.9 trillion cubic feet in 1975.[5] Based on information concerning presently contracted or reasonably assured supplies, the FRC estimates that the gap between the potential demand for gas and the most likely available supply will increase from .9 trillion cubic feet in 1971 to 3.9 trillion cubic feet in 1975.[6]

5. The assurance of adequate supplies of natural gas can mitigate the damage being done to the nation's environment. Natural gas is by far the cleanest burning and least polluting of all the fossil fuels.

6. Any further aggravation of the gas supply problem also portends grave implications for the nation's economic objectives. Between 1947 and 1970, the nation increased its annual consumption of energy from 32.9 quadrillion Btu to 68.8 quadrillion Btu, with the share of the total being contributed by natural gas increasing from 13.8 percent in 1947 to 32.5 percent in 1970.[7] During this period, the nation's real output of goods and services more than doubled and its real income per capita increased by about one-half. It is inescapable that the continued growth and productivity of the U.S. economy requires adequate and reliable supplies of energy, including adequate and reliable supplies of natural gas.

7. Moreover, the "lowest reasonable cost to the consumer" can only be eroded if the nation is forced to satisfy its requirements for gas (1) through increased reliance on new substitute supplies of gas or (2) through the increased use of other fossil fuels. In the case of number (1) above, all information available to the Commission indicates that the new base load supplies of substitute gas will be available to consumers only at costs significantly higher than the prices of currently available domestic well head supplies. In the case of (2) above, the price per BTU for many primary fuels is greater than the price per Btu for natural gas. This comparison is especially unfavorable to the alternative fossil fuels when the costs of storage, handling and pollution control are included. In summary, when the gas shortage forces consumers of natural gas to satisfy their energy requirements by using either substitute gas supplies, *e.g.*, imported liquefied natural gas, propane, reformed hydrocarbons, gassified coal, imported natural gas, or other fossil fuels, the net effect is higher energy costs throughout the economy, with resulting inflationary pressures.

8. Based on a careful and comprehensive evaluation of all facts and information available, the Commission herein proposes to adopt an optional certificate procedure, as hereinafter detailed, for new producer sales of natural gas, in order to provide an alternate method to stimulate and accelerate domestic exploration and development of our natural gas reserves. Herein we propose this alternate procedure designed to assure the interstate consumers of natural gas, and the nation as a whole, an adequate and reliable supply of natural gas at the lowest reasonable cost.

9. We are hereby proposing to amend our General Rules of Practice and Procedure to insert Section "2.75, Optional Procedure for Certificating New Producer Sales of Natural Gas," in Part 2, General Policy and Interpretations, Subchapter A, Chapter 1, Title 18 of the Code of Federal Regulations.

10. The new Section 2.75 reads as follows:

"Section 2.75 Optional Procedure for Certificating New Producer Sales of Natural Gas."

a. Notwithstanding any other provisions in the General Rules of Practice and Procedure of the Federal Power Commission, or the Regulations Under the Natural Gas Act of the Federal Power Commission, applications for certification of future sales of natural gas produced within the United States may, at the option of the signatory parties to sales contracts, be submitted in accordance with the provision of this Section. To the extent that any Federal Power Commission General Rules of Practice and Procedure or Regulations under the Natural Gas Act are inconsistent herewith, the same are hereby amended to permit the optional procedure herein set forth.

b. The provisions of this Section shall be available if each of the following conditions exists:

1. A contract covering the sales of natural gas in interstate commerce has been executed on or after April 6, 1972.

2. All parties to such contract agree to the submission of the same for certification in accord with the provisions of this Section;

3. The purchaser under such contract is a jurisdictional pipeline which, as of the date of the contract in question, has a deliverability life on its entire system, considered as a whole, of less than 12 years; deliverability life as used herein is defined in Section 2.61 of this Chapter;

4. The seller under such contract establishes that he has discharged, or is prepared by specific plan or program to discharge, all obligations (such as refunds) prescribed by prior orders or opinions of this Commission; provided, however, that any such seller may make the showing here required without prejudice to his claim in any cases now pending on judicial review that such obligations were unlawfully imposed by the Commission.

5. The acreage covered by the contract offered for certification has not been previously dedicated to the interstate market (unless abandonment has been previously granted, nor has an application been previously filed with the Commission for certification of the sale of gas from such acreage: *Provided*, That nothing herein shall preclude certification of contracts covering acreage from which sales have been certificated pursuant to special certification procedures under R–389 (35 F.R. 10152), R–389–A (35 F.R. 11638), or Order 431 (36 F.R. 7505).

c. If all of foregoing conditions precedent exist, the signatory parties to the contract may tender the same to the Commission and request the issuance of a certificate of public convenience and necessity to the seller for sales of natural gas thereunder. The application shall certify that all parties to the contract desire certification in accordance with the terms and provisions of this Section, that the seller expressly agree to the waivers and elections hereinafter provided for in subsections m and o of this Section, and that all conditions precedent as set forth in subsection b of this Section are met.

d. Certificates of public convenience and necessity issued and accepted under this Section shall not be subject to change by determinations or orders in area rate proceedings or pipeline rate proceedings whether heretofore made or hereafter to be made, and orders issued hereunder shall not constitute establishment of an area rate.

e. Applications presented hereunder will be considered for permanent certification, either with or without pregranted abandonment, notwithstanding that the contract rate may be in excess of an area ceiling rate established in a prior opinion or order of this Commission.

f. No contract shall be accepted for filing if it includes any type of indefinite pricing clause, including but not limited to a "favored nation clause," a "price redetermination clause", or a "special escalation clause".

g. A seller-applicant under this Section shall state the ground for claiming that the present or future public convenience and necessity require issuance of a certificate on the terms proposed in the application, and shall provide factual support for such claims. The application shall contain a contract summary as prescribed in Sec. 250.5 of our Regulations Under the Natural Gas Act.

h. The purchaser under a contract filed under this Section shall certify that the present or future public convenience and necessity require issuance of a certificate to the seller, and shall provide information in support of such certification with respect to the purchaser's (1) system-wide supply, (2) present and estimated 3-year peak day and average day demands, (3) present and estimated 3-year requirements of customers on its system, (4) deliverability life, (5) implementation, if any of curtailment plans, (6) emergency purchases of gas under Order 431, or 157.22 or 157.29 of these Regulations, and (7) purchases of LNG or attachment of other supplemental supplies.

i. The information required by sub-section g. and h. may be submitted by cross-reference and incorporation of information already on file with the Commission.

j. Applications requesting issuance of certificates of public convenience and necessity as authorized in this Section shall be processed in accordance with the procedural requirements, including those relating to notice intervention and hearing, set out in Part 157 of the Commission's Regulations Under the Natural Gas Act.

k. Pursuant to the authority contained in and subject to the jurisdiction conferred upon the Federal Power Commission by Sections 7 and 15 of the Natural Gas Act and the Commission's Rules of Practice and Procedure, a statutory hearing will be held before the Commission without further notice on all applications for certificates under this Section in which no petition to intervene in opposition is filed within the time required, if the Commission on its own review of the matter believes that a grant of a certificate is required by the public convenience and necessity. Where the Commission believes that a formal hearing is required notice of such hearing will be duly given.

l. A final order of this Commission, issuing a certificate as applied for, or issuing a conditioned certificate acceptable to the applicants, shall constitute a final determination, under Section 7 of the Natural Gas Act, that the rates and services therein specified are required by the present and future public convenience and necessity.

m. By acceptance of a certificate issued hereunder, the seller-applicant unconditionally agrees to (1) waive all rights to seek future rate increases under Section 4 of the Natural Gas Act with respect to the contract submitted, other than fixed price escalations, if any, as certificated by the Commission; and (2) waive all rights to contingent adjustment of flowing gas rates as provided by the Commission in area rate decisions heretofore decided or hereafter issued, for flowing gas which the seller-applicant produces in the same geographical pricing area as the pricing area of the production covered by the application made under this Section.

n. Upon the filing of an application under this Section, deliveries pursuant to the provisions of the tendered contract may be commenced after notice to the Commission and pending review of such application by the Commission. Such notice shall be given within ten days after deliveries first commence, and shall include all pertinent information concerning the deliveries. Any such deliveries sc commenced may be terminated (1) if such contract for any reason shall terminate or be terminated prior to the issuance by the Commission of a final order upon review of such application, or (2) upon the issuance of a certificate containing conditions unacceptable to the party adversely affected. If the Commission by final order shall deny such application, or if the party or parties to the contract adversely affected

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[5] *Future Gas Requirements of the United States*, Future Requirements Committee, Vol. No. 4, October 1971, p. 3.

[6] *Ibid.*, p. 3.

[7] *Mineral Industry Surveys, Petroleum Statement Monthly*, Bureau of Mines, Department of Interior, December 1970, p. 37.

shall not accept the terms and conditions prescribed by the Commission, deliveries thereunder shall be terminated. Within thirty days after termination of deliveries, the seller shall notify the Commission of such termination, and shall report the date of termination, volumes delivered, and revenues received.

o. If the parties elect to commence deliveries as set forth in subsection n., such deliveries will be made at rates no higher than the prevailing area ceiling rate and shall so continue for six months unless the Commission has made its final orders on the application at an earlier date; at the end of such six-month period (if the Commission has not made its final orders), the seller shall be entitled to receive, and the purchaser shall be entitled to pay, the rates specified in the contract, and such contract rates shall continue as the effective rates until the Commission enters its final order on the certificate application.

11. The proposed new Section 2.75 of our General Rules does not replace geographical area pricing under existing regulations and orders of the Commission. The new Section provides an alternative procedure for certification of natural gas sales, as herein provided, for those who elect to seek certification of contracts on the basis that price and other provisions thereof are appropriate under standards of public convenience and necessity. This optional procedure, if adopted, is intended to encourage long term, large volume dedications of new supplies of natural gas to the interstate market.

12. Applications for certification under the optional procedures set forth in this notice will be accepted for immediate filing and processing; provided, however, that Commission action on any application so filed shall be subject to the Commission's final action on the rulemaking proposed in this Notice.

13. Mindful of the national gas supply problem delineated in paragraphs 2–8 above, the Commission reaffirms its obligation to consider applications for special relief under Sections 4 and 7 of the Natural Gas Act for contractually authorized rate increases for gas sold under certificates of public convenience and necessity heretofore issued. Neither the moratoriums imposed in area rate decisions, nor our regulations, preclude the right of an individual seller to apply for special relief and demonstrate that a contractually authorized increase is necessary, even if such increase involves rates above area ceilings. In considering individual applications for special relief, we are required by the Natural Gas Act to determine if a departure from area ceiling rates is required by the public interest. Upon an applicant's showing that the proposed contractually authorized amendment will result in securing a substantial net increase in the supply of gas for the interstate market, a determination of public convenience and necessity will be undertaken by the Commission in the light of the standards set forth in *Austral Oil Co. v. F.P.C.*, 428 F. 2d 407 (5th Circuit 1970), cert. denied 400 U.S. 950 (1970).

14. Any interested person may submit to the Federal Power Commission, Washington, D.C. 20426, not later than May 1, 1972, views, comments or suggestions in writing concerning all or part of the procedures proposed herein. Written submittals will be placed in the Commission's public files and will be available for public inspection at the Commission's Office of Public Information, Washington, D.C. 20426, during regular business hours. The Commission will consider all such written submittals before action on the matters proposed herein. An original and 14 confirmed copies should be filed with the Secretary of the Commission. Submittals to the Commission should indicate the name, title, mailing address and telephone number of the person to whom communications concerning the proposal should be addressed.

15. The Secretary shall cause prompt publication of this notice to be made in the Federal Register.

By direction of the Commission.

KENNETH F. PLUMB,
*Secretary.*

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FEDERAL POWER COMMISSION,
*Washington, D.C., April 24, 1972.*

Hon. MARLOW W. COOK,
*U.S. Senate,*
*Washington, D.C.*

DEAR SENATOR COOK: This is in reply to your letter of February 29, 1972, concerning the natural gas shortage and the effect it is having on the State of Kentucky.

A primary concern of this Commission is the assurance of an adequate supply of natural gas to the American consumer. To this end the Federal Power Commission has taken and is taking a number of steps designed to alleviate the current gas shortage, to stimulate exploration for new natural gas reserves and encourage the commitment of reserves to the interstate market. The FPC is also working toward these ends with other Federal agencies with energy resource responsibilities.

A brief summary of significant FPC regulatory actions to resolve the natural gas shortage includes:

A nationwide investigation to review existing rates and determine whether higher rates should be established for future supplies of natural gas dedicated to the interstate market;

Review and completion of area rate proceedings in important gas producing areas;

Institution of rulemaking procedures designed to stimulate the search for natural gas by independent producers and pipeline companies.

Change of small independent producers price regulation by means of blanket certification and Commission review of gas purchase costs in its pipeline regulation;

Nationwide investigation of the reliability of natural gas service;

Establishment of producer rates by rulemaking proceedings;

Accepting for consideration applications by independent producers requesting issuance of a certificate for sales of natural gas, notwithstanding that the proposed rates may be in excess of the ceiling or guideline rates;

Authorization of importation of liquefied natural gas to meet emergency needs;

Establishment of accounting rules for advance payments and loans to producers by pipelines to stimulate further exploration and development and to increase pipeline responsibility for gas supply;

Review of pipeline company curtailment plans and policies.

Further, the Commission has undertaken a National Gas Survey to investigate the supply-demand-price relationship of natural gas. An important part of this survey includes the independent determination of resources and overall evaluation of natural gas in meeting U.S. energy requirements. This survey should enable the Commission to more effectively regulate the gas industry and thereby provide for a continuing and reliable supply of natural gas to meet consumer needs.

The deteriorating domestic natural gas supply situation has resulted from increasing demand and declining exploration and development over the past decade. The demand for gas as a non-polluting and economic fuel has grown at over six percent per year which greatly exceeded the forecasted demand. Proven additions to gas reserves have not been keeping up with increasing production and sales of gas. This declining ratio of reserves to production is reflected in the rate of exploration and development with about a 50% reduction in the number of oil and gas wells drilled, and a sharp drop in the ratio of gas findings per foot drilled. This decline was caused, among other reasons, by inadequate capital formation and more attractive alternate investment opportunities.

Based on estimates by industry and Government, our reserves of natural gas in the ground are adequate to meet projected production requirements through this century. The problem is to discover, develop and dedicate these reserve resources to the interstate market at a rate sufficient to meet demand and at an economically competitive cost with other energy sources. Many of the factors influencing development of natural gas reserves are not under the control of the FPC such as interest rates, oil import policies, tax policies including depletion allowance, industrial technology, and leasing of Federal lands with oil and gas rights. However, as indicated above, the FPC is taking actions which are calculated to alleviate the shortage. Many of these actions will take time to bring about the desired results due to the lag between investment and return and the reaction time required by industry to respond to governmental regulatory actions.

Based on its clean burning characteristics, natural gas is a premium fuel in the battle to preserve and protect the quality of air we breathe. Under current technology, much of the burden of protecting the atmosphere rests with utilization of low sulfur fuels such as natural gas. We believe that the dual problem of energy resource development and environmental preservation can be resolved with acceptable solutions that meet both objectives. We are working towards these ends for failure to meet both challenges would cause serious detriment to both environmental and economic facets of the national interest.

I can assure you that the natural gas shortage, which is affecting Kentucky and many states throughout the Nation, is a top priority concern of this Commission and other agencies of the Federal Government. The Commission is taking every available means within its authority to solve the gas supply problem, and we appreciate your interest.

Enclosed for your information is a copy of the Chairman's statement of February 29, 1972, before the Committee on Interior and Insular Affairs of the United States Senate. This statement sets forth many of the problems and actions of the FPC regarding the natural gas shortage. If additional information is needed, we will be glad to provide it.

Very truly yours,

THOMAS J. JOYCE,
*Chief, Bureau of Natural Gas.*

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## ARMENIAN INDEPENDENCE

Mr. HARTKE. Mr. President, I wish to voice my support for the Action Committee for Armenian Rights, for the cause of its members, who are dedicated to the illumination and retribution of the atrocities committed against their people in 1915, is a just and righteous one. The passage of time too often causes the abominable events of history to become more palatable, but we should not permit ourselves to condone them by our silence. Through the efforts of such groups as the Action Committee on Armenian Rights, we remain constantly aware of the wrongdoings that have been performed in the past.

The atrocities committed against the Armenian people from 1915 to 1918 by the Turkish Ittihad government certainly should not be forgotten by the people of this decade. During that time over 1.5 million Armenians perished in this unprecedented attempt at genocide. It is impossible to determine the monetary value of the destruction, but the impact these tactics had upon the Armenian

race is clear. Those members of the population who escaped the Turkish massacres, regardless of their constant efforts to regain the lost splendor of their race, have been unable to fully recover from the terrible onslaughts of their adversaries. The United Nations, in actions praised by all who value the protection of national, ethnical, racial, or religious freedoms, is attempting to devise means and methods of preventing and punishing genocide. However, because Armenia is not a member of the United Nations, this country is unable to gain redress of its grievances before this assemblage. The significance of the Action Committee for Armenian Rights is therefore apparent, and I heartily commend them for their attempts to gain recompense from their historical oppressors.

The benefits derived from the efforts of the ACAR include not only those specifically directed toward the Armenian people but to the people of the world as well. By illuminating the tragedy of 1915 this organization will aid in the prevention of such horrors in the future. I ask, therefore, that Senators join with me in supporting the Action Committee for Armenian Rights and the people of Armenia.

## MRS. ROMANA BANUELOS, TREASURER OF THE UNITED STATES

Mr. FANNIN. Mr. President, the Washington Post today published an article on Mrs. Romana Banuelos, Treasurer of the United States.

We in Arizona are very proud that Mrs. Banuelos was born in our State.

She also is living proof that with hard work and determination it is possible not only to share in the affluence of America, but to become one of its leaders.

Mr. President, I ask unanimous consent that the article be printed in the RECORD.

There being no objection, the article was ordered to be printed in the RECORD, as follows:

U.S. TREASURER: FROM 36 CENTS TO $36 TO $36,000

(By Digby Diehl)

LOS ANGELES.—Romana Banuelos, the recently appointed 34th Treasurer of the United States, says her lucky number is 36. She had 36 cents in her pocket when she came to Los Angeles from Mexico in 1944. After the first day of business in a tortilla factory she bought in East Los Angeles, she had sold $36 worth of tortillas. And she is now paid $36,000 a year as treasurer.

Romona's Mexican Food Products Inc., expanded from the tortilla factory to become the largest Mexican Food wholesale concern in the nation. It is now a $5-million-a-year operation employing over 300 people.

Although her work as treasurer keeps her in Washington, D.C., most of the time, we talked recently at her large, decidedly non-Spanish style home in the Los Feliz area of Los Angeles. In an animated Spanish accent she discussed her appointment and her background as a Mexican-American businesswoman with a combination of charm and political precision. During the conversation, her lucky number 36 came up again, 36 illegal aliens:

Question: Before you were approved as treasurer by Congress, you were questioned by members of the Senate Committee on Finance about disclosures that officers of the Immigration and Naturalization Service raided your plant and found illegal Mexican aliens employed there. What is your reaction to the episode of the illegal aliens?

Banuelos: I think the press misrepresented the situation. When someone comes into Ramona's Food Products looking for a job, we give him an application. He fills out the application and we keep it on file. In Washington, the senators asked me about the questions on the application. I told them that the important question is: Are you an American citizen or resident?" One senator asked me if I asked anything else and I said no. And he said that I was correct because I didn't have the right to ask anything else. Also, the senators requested a list of the wages paid to both legal and illegal workers and compared them. When they saw that I paid the same to everyone according to the job, they were so angry that they told the immigration department and the AFL–CIO that they should be on trial instead of me. But that didn't come out in the newspapers.

Q: Didn't Cesar Chavez write a letter opposing your appointment?

Banuelos: When I went to the Senate hearings there was a letter read, saying that Cesar Chavez was opposing my appointment. But Chavez was not informed that Ramona's Food Products was a union plant. He was not informed about the working conditions at Ramona's Food Products. Neither was he informed that of those 35 illegals that were removed from the plant 34 of them were members of the union, and they were up to date with their dues and two of them were working for a 30-day trial period before they could become members of the union. So for some reason, they didn't inform Chavez of the truth. And they didn't show him the employment contract we had.

Q: It seems that you have been able to break through the barrier of prejudice toward Mexicans in America and open some doors by yourself. You were born in poverty in Miami, Arizona, weren't you?

Banuelos: Yes, it is a small copper mining town. My family first came to the United States from Chihuahua at the time of the revolution of Pancho Villa. My grandmother lost her husband who fought with Villa and she had 14 children. My father met my mother in Miami, Arizona, and I was born there in 1925. My father had been a colonel and a paymaster with Villa when he met my mother. In Miami, he worked in the copper mines. In 1932, the authorities advised my father and mother that as Mexicans they could no longer have jobs during the depression and they would have to go back to Mexico. They were offended but we went back and lived in the state of Sonora. Then, in 1942, at the age of 16, I was married and my husband and I came to the United States after two sons had been born in Juarez, Mexico. Two years later I got a divorce. My mother took care of my two sons in Juarez and I came to Los Angeles, because in El Paso the wages are very low. I worked for $1 a day in 1943 in the El Paso Laundry Company.

Q: That is incredible.

Banuelos: I had heard that in California all you had to do was to come and sweep up the money with a broom. So I came to Los Angeles. When I arrived in the bus station I had $7, but I took a taxi and the driver charged me so much that I only had 36 cents after I paid him. Of course at that time I couldn't speak English and couldn't complain very much when he overcharged me. That was my introduction to Los Angles.

Q: What did you do with 36 cents in Los Angeles?

Banuelos: I stopped at a house of my mother's friend and I started working right away. A lady took me to the back door of her restaurant and showed me a huge pile of dishes. She said she would pay me cash that day if I washed the dishes. So I worked for about 10 hours and she paid me $8 cash. And that was very good for me because then I had enough money in my pocket for transportation the next day to look for a job. I worked like this until I went into business for myself. There was a little tortilla factory on Temple and Bixel with one tortilla machine and a grinder in a showcase in the front. It was owned by three men and they wanted to sell it for $2,500. I had $400. I made arrangements to borrow money from my aunt and I made a down payment. So I owned one fourth, my aunt owned one fourth and the rest was owned by the gentlemen. Then I worked in the factory every day learning to make tortillas. I was about 23 at the time.

## NAHB AND THE INTEREST SUBSIDY HOUSING PROGRAMS

Mr. PERCY. Mr. President, I do not believe anyone can deny that one of the major domestic issues at the moment, and perhaps, as Ralph Nader says, the major consumer issue of the 1970's, is the quality of housing, particularly the quality of housing insured under various Federal Housing Administration programs.

Grand jury investigations are proceeding in several cities into charges of fraud and corruption in the operation of programs such as the FHA section 235 program of homeownership for low-income families.

Two congressional committees—the Senate Antitrust and Monopoly Subcommittee, chaired by the able and distinguished senior Senator from Michigan (Mr. HART), and the Monetary and Legal Affairs Subcommittee of the House Government Operations Committee—are conducting major hearings into abuses in our housing programs which have lead to large profits for unscrupulous operators and shoddy housing for unsophisticated home buyers.

I am pleased that these efforts are being directed toward strengthening and improving the section 235 and section 236—rental and cooperative housing for low-income families—programs.

I am pleased also that the private sector is acting responsibly toward the well-documented problems in these programs.

Mr. Stanley Waranch, president of the National Association of Home Builders, has rightly noted that the problems are not confined to the interest subsidy programs and, indeed, the foreclosure problem is related primarily to the unsubsidized programs in the inner-city. He also notes, and rightly so, the positive effects of the interest subsidy programs on increasing the housing stock.

But, Mr. Waranch says:

We do not condone abuses of any kind and we pledge ourselves to help stop abuses in any of the programs.

As part of this effort, the NAHB has initiated a major study of the subsidy programs.

The NAHB has commissioned the Real Estate Research Corp. of Chicago and its extremely able senior vice president, Dr. Anthony Downs, to undertake this study. I have unbounded respect and admiration for the scholarship of Dr. Downs. I know he will prepare an objective and penetrating analysis of these programs. I look forward with great anticipation to the results of this study and I commend the NAHB for commissioning this work.

I ask unanimous consent that the statement by Mr. Waranch announcing this study be printed in the RECORD.

There being no objection, the statement was ordered to be printed in the RECORD, as follows:

STATEMENT BY STANLEY WARANCH

We need to set the record straight on housing lower income families under Federal subsidy programs: Until the mid 60's we never produced more than about 50,000 units annually for lower income families in the postwar period. By the end of the decade we were producing nearly 10 times that number. In 1970 it was 433,000 units, in 1971, 445,000. As HUD Secretary Romney has said, we have provided more housing for low and moderate income families in the past three years than in the previous 31.

There still is, however, a long way to go. There are millions of families in this country whose incomes are too low to get decent housing without these Federal subsidy programs, and the nation is in danger of defaulting on its obligations.

We are confronted with distortions of the subsidy record and the programs' operations; inaccuracies, and barely-concealed biases that obscure the realities and the accomplishments of the programs. The programs demand to be put into perspective, and the story of the successes of these programs be told.

The basic purpose and intent of the Congress in developing the programs is conveniently forgotten; the successes are ignored. The programs were enacted by the Congress to carry out a national commitment to provide decent housing in suitable living environments for low and moderate income families. They were not developed as the panaceas for society's ills, although an important by-product has been both a morale and economic boost to such families.

The subsidy programs are not subsidies for brick and mortar or for builders. They are subsidies for people—to enable them to escape wretched, dilapidated, deteriorating housing where one out of six families still live.

The two current major subsidy programs were created in the Housing Act of 1968 and, in effect, have had but a three year history. These programs are Section 235, providing interest rate subsidies to lower and moderate income families for purchase of homes, and Section 236, also providing interest rate subsidies for families for rental of units.

By and large, these programs have helped once-forgotten families to decent housing and many toward fulfilling their desires to be home owners. It has stimulated their efforts to improve their economic status. Of the first group of home purchasers under Section 235 to have their incomes re-examined as Congress requires every two years, 8 percent were earning enough to go off the subsidy program entirely and to carry their homes on their own, and 65 percent had decreases in their subsidies as a result of improved incomes.

Abuses, it is reported, have crept into the programs, particularly with regard to the cosmeticizing and sale of existing houses by speculators. We do not condone abuses of any kind and we pledge ourselves to help stop abuses in any of the programs. But there have been relatively few cases of abuses in the construction and sale of new units. Nonetheless the entire program finds itself tarred. As a result of these abuses, overwhelmingly in the existing house sector, the whole subsidy effort of the government—its cost and its relevancy—has been brought under broad attack, much of its misleading and misdirected.

Reports of numbers of FHA foreclosures in several cities are described as failures of the subsidy program. But they are not, in fact, failures of current subsidy programs. They were in other, older, and *unsubsidized* programs where Congress specifically directed that larger risks be taken in insuring mortgages in an attempt to save areas apparently headed for blight.

An article in a prestigious publication, Fortune Magazine, concludes that the costs and benefits of the entire subsidy programs must be a grand delusion. Aside from confusing many of the programs, it makes a grand and inaccurate point of emphasizing that the total cost to the Federal government of a 236 subsidized rental unit would be $142,024 over a 40 year period.

An examination, based on government figures, of the "typical" case cited reveals an entirely different picture, and must make suspect many of the premises in the entire article. Our calculations show that the total cost over 40 years, even assuming the unlikely occurrence that a family would remain on subsidy for 40 years would be about $37,500.

The Fortune article, on the other hand, includes in its total such "costs" of the subsidized rental unit as $25,920 in welfare payments. Welfare payments would be made in any case, have no relevance to the 236 program and, furthermore, few 236 tenants are on welfare.

One so-called "expert" is quoted as saying that 236 "may foist the worst wave of slums on the country since the first antislum ordinances were adopted in the nineteenth century." The fact is that 236 projects are built under strict government design and engineering standards and project selection criteria instituted by the Department of Housing and Urban Development will insure that locations will be superior.

We in the National Association of Home Builders recognize that there are improvements to be made in the programs. We seek them. HUD recognizes problem areas, and Secretary George Romney has been administratively moving to correct them.

The Congress has been studying the situation. I don't believe, however, it will be stampeded into abandoning what are essentially sound programs to carry out both national housing goals and national housing policy. In fact, the Senate reaffirmed that policy with passage this month of a massive housing bill which consolidates and simplifies programs by a vote of 80 to 1—a bill which continues and expands the scope of the subsidized programs with appropriate safeguards.

We do not say that the programs, as currently operating, are the ultimate ones that can be devised to provide the hope and housing for families whose incomes are not adequate to bring them into the market place. Certainly there is always room for improvement, particularly since the programs are so new.

To that end, the National Association of Home Builders has initiated a major study of the subsidy programs. Its aim will be to assess as objectively as possible existing and proposed federal housing subsidy programs, to evaluate them, and suggest improvements or, perhaps, even new directions.

Participating in sponsorship of the study with NAHB are the U.S. Savings and Loan League and the National Association of Mutual Savings Banks.

To undertake the study, we have contracted with the Real Estate Research Corporation of Chicago, one of the most knowledgeable and respected housing and urban research firms in the country. Its senior vice president, Dr. Anthony Downs, who served on the Douglas Commission, Presidentially-appointed groups which studied America's urban and housing problems, has been asked to examine existing programs, to consider alternatives and, if necessary to come up with recommendations as to new approaches that would best suit the country's needs.

Dr. Downs is being given a completely free hand to make the study meaningful and constructive. We expect to have its findings later this spring.

As concerned citizens and businessmen, we are involved with these problems and are prepared to make extraordinary efforts, in cooperation with the government, to provide more housing that so many families desperately need now in the most efficient and reasonable manner possible.

## RUMANIAN INDEPENDENCE

Mr. HARTKE. Mr. President, on May 10, Rumanian people throughout the world celebrated the 95th anniversary of their independence.

In fact, May 10, is the most significant date in Rumanian history.

On May 10, 1866, Charles, Prince of Hohenzollern-Sigmarigen, was proclaimed Prince of Rumania, putting an end to the nation's long struggle to acquire the right to elect as its sovereign a member of one of the Western non-neighboring reigning families and ending internal strife.

On May 10, 1877, the principality of Rumania declared its independence and allied itself with Russia against the Turks.

On May 10, 1881, Charles I was crowned, by the will of the people, King of Rumania. A period of prosperity followed.

World War II, and 1945, however, ended the independence of this brave nation. Soviet occupation troops forced the Rumanians to establish a Communist government that would be a satellite regime to the Kremlin.

Throughout history Rumania has been the crossroads between East and West. Although Communist rule still prevails in this long oppressed nation, its people still cherish their dream of once again being free. On the occasion of the anniversary of their independence, I urge that we continue to support their hope for self-determination.

## INCREASING VETERANS EDUCATIONAL ASSISTANCE BENEFITS

Mr. MATHIAS. Mr. President, I ask unanimous consent to have printed in the RECORD the testimony of the National Council of Independent Colleges and Universities before the Senate Committee on Veterans' Affairs on April 28 of this year.

The testimony supports the concept of providing tuition payment for veterans' college education and urges the committee to report favorably S. 3345, a bill proposed by the American Legion to improve veterans educational benefits. It is similar in concept to my own bill, S. 2163, the Vietnam Veterans Act of 1971, which would provide a direct tuition payment of up to $1,000 for tuition, books, fees, and related supplies for veterans paid directly to the educational institution by the Veterans' Administration similar to the World War II GI bill, under which I attended law school.

There being no objection, the statement was ordered to be printed in the RECORD, as follows:

STATEMENT BY PRESIDENT LANDRUM R. BOLLING

We begin our testimony this morning by commending the United States Senate for

forming a few months ago a standing committee on veterans' affairs. The consolidation of all authorizing activities previously conducted by several separate committees should provide more expeditious and efficient legislation for veterans and the nation as a whole. We extend our best wishes for the achievement of an illustrious record and offer our cooperation in your work.

Few committees have more potential to influence higher education and the nation than this one. We cite as an example the enactment of the Servicemen's Readjustment Act of 1944, more familiarly known as the World War II GI Bill. The Congress, in this single piece of legislation, perhaps did more to transform higher education and set lasting education priorities for the nation than has been achieved by any comparable piece of strictly education legislation. The World War II GI Bill, plus the original land-grant act in 1862, were truly landmark and historic legislation. The future legislative achievements for this committee hold equal promise.

The associations we represent, the Association of American Colleges and the National Council of Independent Colleges and Universities, comprise most of the undergraduate, four-year liberal arts colleges, independent and public, and nearly all the independent colleges and universities of the nation. Their combined total is approximately 1300 institutions of higher learning. We thank you now for this our first opportunity to testify before this subcommittee in its first round of hearings on improving veterans' educational assistance.

We commend the chairman of the committee for setting the scope of these hearings by saying, "Perhaps our most important work this year will be to review and revamp the present educational benefits under the GI Education Bill." We appreciate his opening statement to the subcommittee in which he indicated "there are no forbidden areas of discussion for this committee." The needs of the nation, its veterans and its colleges and universities require such a charge.

The times in the life of this nation in which you are legislating are difficult, nay painful. Almost unyielding forces are tearing at the fabric of our society. How every much unlike the days in June, 1944, when a grateful nation passed a veterans' education bill described in 1965 by John R. Emens, then president of Ball State Teachers College, as "an expression of faith in ultimate victory . . . the United States had made plans for its veterans." We are now engaged in an "unpopular" war, not knowing from day to day whether it is winding down or escalating. Yet, the needs of the nation today are as great; the opportunity to turn it around to face the future with hope is equal if not greater. We must now allow our doubts about the legitimacy of this war to deprive those veterans who willingly fought for us.

The obstacles before this committee to vastly improve veterans' educational benefits, generally regarded by the Congress as well as society to be inadequate, are difficult to surmount also. You have before you a House-passed bill, under a closed rule, to increase monthly benefits from $175 to $200, coming at a time when student charges next fall, in many public colleges as well as independent colleges, have been increased by more dollars than the increase in benefits, leaving thousands of veterans with less dollar support next year than in the current school year. Further, the Administration has not requested legislation which would provide adequate benefits. How unlike, again, the days in 1944 when Congress passed the GI Bill without a dissenting vote! Clearly to us, someone in the Congress must undertake a challenge to these inadequate responses to the needs of veterans which will again point the nation to the future with hope and to the veterans with appreciation.

We gratefully recognize that this committee is committed to improving veterans' education benefits. We pledge now our support for an adequate increase in benefits. The question and the problem is: shall it be done by increased monthly payments to the veteran and/or a direct tuition payment?

Neither the current $1575 benefits per nine-month school year, nor the House-proposed $1800 benefits, will cover the full cost except at a low-charge public institution, mainly the community college. Such limited benefits restrict veterans to certain low-charge colleges, in effect making the veteran choose postsecondary education on economic limitations rather than educational preferences. This influence may, in part, account for the fact that Indiana, which ranks 10th in veterans population, ranks 48th in percentage of veterans in college; while California ranks first each in veterans population, veterans in training, and percentage in college. Some of the major influences in the California experience undoubtedly relate to a state scholarship program and an outstanding community college system. But the veterans, in the fifty states, were summoned to service by the federal government—the responsibility for equal educational opportunity for veterans belongs in Washington. Further, fewer tax dollars would be required to subsidize the veteran than to build public low-charge systems in states, assuming there is some respite between wars.

The low present monthly benefit is one problem: a second problem relates to the proposed increase in these monthly benefits. Presently, the $1575 provided for a nine-month school year already covers the fixed expenses at low-charge colleges. Increasing the annual support to $1800 or $2200 for the school year only increases the amount of 'extra' federal dollars beyond the fixed costs at those institutions currently attended by more than 40% of all under-graduate veterans.

A third problem facing the committee deals with stories of abuses under the orginal GI Bill. No greater abuse can be cited than the discrimination which took place under the Act. In 1944 the nation did not understand the need for civil rights clauses in educational legislation, or indeed veterans' legislation. Can anyone imagine the nation or Congress writing legislation today without prohibiting discrimination? Other abuses related to fly-by-night schools and price-gouging. Can anyone imagine the nation or Congress—having learned in the National Defense Education Act of 1958, the Higher Education Facilities Act of 1963, the Higher Education Act of 1965 or the National Science Foundation Act of 1950 how to create a proper federal-college/university relationship—permitting these abuses to be repeated!

A fourth problem is speculative: how will the Vietnam veteran influence the future of this nation? The post-World War II years and today do not provide an exact basis for comparison but a sufficient number of common denominators exist to permit an attempt. The World War II GI came home to a grateful nation, supported by a marvelous piece of legislation to benefit the veteran. The remarkably high degree of aspiration of today's parent, millions of them veterans, for education for their children has helped make this nation the most highly trained in the world. The World War II GI has repaid the government several times over in taxes the almost $15 billions cost of veterans' education.

Today's GI comes home to a troubled world, faced with uncertainties and unemployment. This veteran is underutilizing his or her education benefits, despite greater efforts by the government to give encouragment; the veteran knows his or her service has not brought a comparable education benefit to his or her parents'. If the veteran today is disillusioned, and we believe he or she is, then we must speculate what the veteran's responses will be to our society in another twenty years. We can greatly assure the proper response in part now by implementing creative legislation. And again the veterans' affairs committees can be instructive to the Congress in how to legislate education for all for the future.

We urge this committee to report S. 3345 introduced by Senators Hartke and Thurmond on request. With the genuine concern of this nation for equality of opportunity we feel the veterans should have their own kind of equality of opportunity as provided in S. 3345 which would mean attending the college of their choice and having sufficient subsidy to help pay for most of it.

The provision in S. 3345 for the lesser of $1000 or 75% of tuition would not underwrite the full cost of tuition at the higher-charge college or university, but with the eligibility of the veteran for other federal student aid programs the achievement of equality of opportunity would be more nearly approached. Its enactment would provide approximately one-half tuition charges at higher-charge colleges and universities.

S. 3345 would provide greater opportunities for veterans to attend independent colleges or universities. It would also make a dramatic and effective move toward offsetting the present underutilization of veterans' education benefits. Whether the *Parade* Sunday supplement of January 23, 1972 is quoted at 28% or Veterans Administration figures at an overall participation rate of 38.1% (DVB IB 24–7201), it is generally conceded veterans are not using education benefits at a desired rate. S. 3345 would make a major contribution to solving what could be added as a fifth problem facing the committee.

Although we are attempting to state the case for greatly increased veterans' education benefits and equal educational opportunity for the veteran, we are not doing so solely for the self-interest of independent colleges or universities. Testimony presented earlier to this subcommittee by the National Association of Collegiate Veterans, Inc. contained results of a survey of public universities which showed 65% of veterans enrolled in those universities stated costs of their education was $3,000 or more annually. We wish to demonstrate that veterans' education benefits are inadequate for many institutions, public or independent.

Clearly, veterans are not attending independent colleges or universities at the same rate as after World War II, which was 50% of all veterans in training. The rate today is near 20%, one-half of which are part-time. Some weeks ago the National Council of Independent Colleges and Universities provided each Senator a comparison of veterans enrolled in its member institutions in 1947–48 versus the current school year. The loss is not tabulated alone in tuition income, for the independent sector has grown in enrollment, although at not so rapid a rate as the public sector. The loss is in the veteran as a person, and in sufficient numbers so as to present a point of view badly needed by the non-veteran. The absence of a significant veteran enrollment is a cultural loss to the 2,000,000 plus students in independent colleges. The effect of this loss is supported by studies which show students learning as much from their peers as their teachers.

We are not assuming the veterans would choose independent colleges at the same rate as under the original GI Bill. We do feel, however, the veteran would distribute himself or herself among colleges in about the same proportion as the general student population if the benefits were comparable to World War II benefits. The veterans merits at least the choice, which present benefits do not provide.

Our testimony up to this point has been

aimed toward influencing the philosophy of veterans' education benefits, toward making a fundamental change in the present program. For the many operative suggestions for current veterans' programs we recommend the testimony presented this morning by the American Association of Junior Colleges and its very able director of programs for veterans and servicemen, Dr. John Mallan, and their witness, President James H. Hinson, Jr., of Dekalb College in Clarkston, Georgia.

The AAJC and the AAC operate separate Veterans Outreach programs. The former has been described to you; the latter began operating in January, 1972, in 50 states and two territories, with 700 colleges signed up to receive almost 2,000 monthly lists of discharged veterans by state of residence at the time of discharge. These programs are operated in cooperation with The American Legion and the Veterans Administration. The independent colleges and universities are earnest in their desire to encourage veterans to undertake post-secondary education. We join this committee in that effort

## MRS. JOSEPHINE CHRISTIANSEN OAKS, PROVO, UTAH, NAMED 1972 YOUNG MOTHER OF THE YEAR

Mr. BENNETT. Mr. President, I have just had the pleasure of learning that Mrs. Josephine Christiansen Oaks of Provo, Utah, has been named the "Young Mother of the Year."

Mrs. Oaks is the mother of six young children and has still managed to find time for outstanding service to her community. I am certain all Utahans are very proud of her today. I ask unanimous consent that an article published in the Washington Daily News today be printed in the RECORD.

There being no objection, the article was ordered to be printed in the RECORD, as follows:

[From the Washington Daily News, May 11, 1972]

YOUNG MOTHER OF YEAR

NEW YORK.—Josephine Christiansen Oaks of Provo, Utah, was named today as 1972 young mother of the year at the 37th annual convention of the American Mothers Committee Inc.

Mrs. Oaks, mother of six children, is a teacher and head of a child guidance program at the Provo Civic Center.

The young mother of the year award was limited to those mothers in the contest under the age of 34.

The group will announce its official national mother of 1972, chosen from among mothers representing each of the 50 states, the District of Columbia and Puerto Rico, at a luncheon.

## FOREIGN TRADE AND INVESTMENT ACT

Mr. HARTKE. Mr. President, in February of this year, we suffered the second worst trading month in our Nation's history—a deficit of almost $600 million. At that rate, our trade deficit could be over $7 billion at the end of the year.

At the same time, our unemployment picture has taken a turn for the worse. Now 5.9 percent of our work force is out of work, and there are no signs of improvement.

In these circumstances, I was not surprised to learn that the Milwaukee City Council and the Milwaukee County Board of Supervisors became the first local government bodies to endorse the Foreign Trade and Investment Act of 1972—the Hartke-Burke bill.

Because of the importance of this first step, I ask unanimous consent that an article from the Machinist, concerning the recent endorsement, be printed in the RECORD.

There being no objection, the article was ordered to be printed in the RECORD, as follows:

CITY COUNCIL VOTES TO BACK BURKE-HARTKE

Milwaukee City Council and the Milwaukee County Board of Supervisors are the first two local governing bodies to endorse the Burke-Hartke Act.

This is the measure in Congress that seeks to save American jobs from export overseas by removing some of the tax and tariff advantages now enjoyed by multi-national corporations. The measure, S. 2592, is authored by U.S. Sen. Vance Hartke of Indiana and U.S. Rep. James Burke of Massachusetts.

The Milwaukee Council and County Board acted under pressure from the Coalition of Unions to Save Jobs, Milwaukee unions whose members have suffered particularly from overseas runways. Al Brown, vice president of IAM Local 1061, represents the IAM on the steering committee. Brown reported these facts:

Firms that have been gradually reducing operations in Milwaukee include such well-known companies as Cutler-Hammer, Inc., Allen-Bradley, Square-D, Louis-Allis, John Oster, Johnson Service, Fedders Corp., and Allis Chalmers.

Cutler-Hammer, for instance, has dropped from a high of 3,600 shop employees several years ago to 1,050 at present. During the phasing-out process there are many internal transfers that have downgraded employees' pay from 50 cents to $1.50 an hour.

## OBSERVANCE OF SOIL STEWARDSHIP WEEK

Mr. FONG. Mr. President, May 7 to 14 marks the 19th observance of Soil Stewardship Week. This year's theme is "Creative Conservation."

During Soil Stewardship Week, all citizens are asked to be especially mindful of their obligation as stewards of the soil, water, and other natural resources.

Hawaii's districts are joining 3,000 companion districts throughout the country to provide local sponsorship of this observance for the 18th consecutive year. The districts—along with their State and national associations—deserve praise and gratitude for their history of concern for the quality of our environment.

As residents of our Nation's only island State, Hawaii's people are keenly aware of the limitations of their land and other natural resources. For three decades, two of the various agencies that have made significant contributions to conservation of land and water resources in Hawaii are our 15 soil and water conservation districts, charged by State law to conserve and protect land and water resources in the State, and the U.S. Department of Agriculture's Soil Conservation Service, which provides technical help through these districts to the people of my State.

Hawaii was the first State in the Union to have a completed soil survey, a cooperative survey accomplished under the leadership of the Soil Conservation Service. Soil surveys, of course, are the foundation of good land-use planning. The State is well known in planning circles for its progressive land-use laws. Decisions on statewide zoning boundaries benefit from information provided by the SCS soil survey and interpretations.

The Soil Conservation Service is providing valuable technical planning help to sponsors of the Tri-Isle resource conservation and development project, which has received substantial Federal funds. The sponsors of Hawaii's first such project are the County of Maui and the five soil and water conservation districts in the county. Local people are finding that the project leads to improvement of all aspects of the quality of life in the three-island project area.

Two projects under provisions of Public Law 566, the Small Watershed Protection and Flood Prevention Act, have been completed. They are the Naalehu watershed project and the Puukapu watershed project, both on the island of Hawaii. These were among the 10 applications for planning assistance which have been submitted to SCS from Hawaii. The other projects are in various stages of planning and construction.

Plant materials, after testing at the SCS Plant Materials Center in Hawaii, are being used to beautify the countryside, stop soil erosion, and improve the quality of agriculture in Hawaii as well as in other areas of the Pacific Basin.

The success of this kind of Federal assistance is due immeasurably to the efforts and leadership of the State's soil and water conservation districts. Landowners who have cooperated with districts for years have been effectively acting on the ecological concern today so widespread. Preserving the good qualities of life—one of the great challenges facing our Nation—is a continuing consideration in active district programs.

The districts include practically all landowners in the State and 96 percent of the land. In fact, about 80 percent of the entire State is under cooperative agreement with districts, reflecting landowners' intentions to apply needed conservation measures. Since the Soil Conservation Service's first study of conservation problems in Hawaii in 1938, landowners themselves have invested more than $80 million in conservation practices.

Hawaii's citizens are proud of the work accomplished through the district movement with the assistance of the Soil Conservation Service and other agencies; are indebted to district leaders for their efforts to keep the public informed about vital reserve conservation and development needs; and are most appreciative of the continuing support Congress and the President have given this program.

Mr. President, the House of Representatives of the Sixth Legislature of the State of Hawaii, regular session of 1972, unanimously adopted House Resolution No. 392, "Supporting Observance of Soil Stewardship Week, May 7–14, 1972," the text of which is as follows:

Whereas, the preservation of environmental quality is not only a national objective of paramount importance, but also one of this State's major goals; and

Whereas, for the past two decades, the Government and people of Hawaii have sought to preserve environmental quality through the creation of soil and water con-

servation districts designed to implement proper resource conservation and development; and

Whereas, these soil and water conservation districts, together with the Hawaii Association of Soil and Water Conservation Districts, are sponsoring local observances of Soil Stewardship Week, May 7–14, 1972, for the 18th consecutive year; and

Whereas, by proclamation of the Honorable John A. Burns, Governor of the State of Hawaii, the people of Hawaii will join in the activities and ceremonies recognizing this observance; now, therefore,

Be It Resolved by the House of Representatives of the Sixth Legislature of the State of Hawaii, Regular Session of 1972, that this body endorse the proclamation of the Governor and encourage the citizens of the State of Hawaii to support the observance of Soil Stewardship Week; and

Be It Further Resolved that the House of Representatives extend its congratulations and appreciation on behalf of the citizens of this State to the officers of the Hawaii Association and National Association of Conservation Districts for their active sponsorship of his event; and

Be It Further Resolved that certified copies of this Resolution be transmitted to the Honorable John A. Burns, Governor of the State of Hawaii; John S. Wilder, President of the National Association of Conservation Districts; Northrup Castle, President of the Hawaii Association of Soil and Water Conservation Districts; Earl L. Butz, Secretary of Agriculture; Kenneth E. Grant, Administrator of the Soil Conservation Service; Fred Haughton, State Conservationist; and Sunao Kido, Chairman, Board of Land and Natural Resources.

In connection with sponsorship of Soil Stewardship Week, districts fill requests from churches of all faiths for published materials created particularly for the current observance. The materials are prepared by the National Association of Conservation Districts in consultation with an advisory committee composed of leading churchmen. I commend to the attention of Senators a portion of this material—a strong plea for the conservation of our natural resources—as follows:

CONSIDER CONSERVATION

It's the will and the skill of responsible man
To protect and use wisely the treasures of land—
The waters and wildlife, the forests and fields,
Plus the bounty of beauty God's countryside yields.

It's the fight against ignorance, waste, and greed
To save the resources that all men need.
It's the foe of erosion, forest fire, and flood—
Three agents of ruin, pollution, and mud.

It's the vision and work to add something good
To the home, to the farm, to the whole neighborhood.
It's new lawns and new gardens; a lake built to please;
It's roadsides with grass and hilltops with trees.

There's a lot to be done for the state of our living
But each gain requires *your* share of self-giving.

Consider conservation. Consider it well.

## LEARNING EXCHANGE

Mr. PERCY. Mr. President, in an era when institutionalized education is receiving criticism for not being responsive enough to the needs and concerns of the individual, many Americans are seeking meaningful and enjoyable alternatives to classroom learning. A group of people in Evanston, Ill., have organized an innovative program called the Learning Exchange. The project requires neither huge sums of money nor large numbers of people. Yet in its year of operation, the Learning Exchange has broadened the educational opportunities of the people of the Evanston area and demonstrated that teaching and learning can also be fun.

I ask unanimous consent that information on the Learning Exchange program be printed in the RECORD.

There being no objection, the information was ordered to be printed in the RECORD, as follows:

A COMMUNITY'S EFFORT TO RECYCLE EDUCATION

In May, 1971, a group of graduate and undergraduate students at Northwestern University along with residents of the Evanston community joined together to establish the Learning Exchange. After eleven months of operation this simple educational mechanism has grown to serve the learning needs of almost 1,000 participants and offers a "curriculum" of over 700 topic areas. The total cost of the Learning Exchange program has been under $200.

The area presently served by the Learning Exchange roughly corresponds to the outer limits of the Chicago metropolitan area. The focal point of the learning community is a small, borrowed office provided by United Community Services of Evanston. The Exchange is two telephones, three boxes of 3x5 file cards, and a group of fifteen volunteers who determine policy and answer the telephones.

Anyone who wants to use the services of the learning community simply writes or telephones the Learning Exchange and indicates his educational needs and interests to the volunteer operator. If the caller wants to learn a skill or body of knowledge, he is given the names and phone numbers of people who know what he wants to learn and are willing to teach him. The learner assumes responsibility for contacting one or more of the teachers provided and attempts to work out a mutually satisfying learning relationship. Decisions regarding meeting time, place, frequency, rate, and fee (if any) is mutually decided by the teachers and learners to suit their needs or convenience.

Teachers who wish to make their services available to other members of the Chicago metropolitan community are invited to register with the Exchange. Some have school credentials and certificates, while others draw on work, leisure, or life experience as the basis for their knowledge. Preliminary research indicates that the Learning Exchange is successfully tapping onto or recycling some of these skills, talents, and knowledge that have not previously been utilized. A quality control mechanism is presently being devised that will enable the recipients of a teacher's service (learner) to recommend or not recommend the teacher to prospective learners.

Another aspect of the Learning Exchange is called the Interest-Match, wherein there are no teachers and no learners, just people who are interested in discussing a topic of mutual interest. People in the learning community, for example, are forming groups around book titles, hobbies, foreign languages, etc.

The Learning Exchange services are offered free to the public. There are no access restrictions whatsoever. It is a highly pluralistic group—7 year olds to senior citizens, grade school drop-outs to Ph.D.'s, and all social and ethnic groups are represented in this learning community. Aside from being very inexpensive, this new approach to self-improvement and education encourages a sense of community and is even being used by local public, parochial, and free schools to enrich their academic and extra-curricular programs.

[From the Chicago Sun-Times, Nov. 9, 1971]

HOW "LEARNING EXCHANGE" WORKS—AT $27 FOR 6 MONTHS

(By Dennis D. Fisher)

The radio ad was catchy:

"Would you swap what you know for what you want to know with someone who knows what you want and wants to know what you know?

"If so, then call the Learning Exchange weeknights at 475–2402."

A phone call to Robert Lewis, 30, a doctoral candidate in education at Northwestern University and a co-founder of the exchange, netted more specifics on the unusual experiment in learning.

"It is a free educational matching service for anyone with access to a telephone or the 8 cents for a postage stamp," he said. "We don't offer a school. All we offer is a mechanism for getting learners and teachers together."

STARTED IN MAY

The exchange was started in May by Lewis and Denis Detzel, 25, who is a doctoral candidate at NU in sociology of education.

Detzel said the idea for a learning exchange originated from three months of study at the Center for International Documentation run by radical social critic Ivan Illich in Cuernavaca, Mexico.

The institution of education in this country is "a locked system" that destroys motivation and the will to learn, Detzel observed.

"An individual (in school) has no choice over who will teach him, what he wants to learn or when he wants to learn it," Detzel said.

"We wanted to develop a learning structure that anyone could use, rich or poor, regardless of race or skill level," he said. "And we also wanted a structure that was not controlled by the state or any bureaucratic system."

PARTICIPATION VOLUNTARY

The Learning Exchange has about 20 nonpaid co-directors and a very loose organizational structure that works on a voluntary basis. The directors meet once a week and discuss issues and problems and volunteer for shifts at manning the phone for the next week.

The exchange is set up in borrowed space in the Volunteer Bureau of Evanston office at 828 Davis. Expenses are minimal because no outgoing calls are placed. The whole budget for six months has been $27, most of which was used for printing costs.

The co-directors supply callers with the phone numbers of teachers, learners or those with a mutual interest, like a hobby or discussion of a best-selling book.

The Learning Exchange has built up a file of 290 topics, ranging from traditional amateur radio and the stock market to more colorful subjects such as the Baha'i faith, communes, Esperanto, handwriting analysis, psychic investigation and hammock making.

There are potential learners but no available teachers for Aikido, auto mechanics, chinchilla ranching, playing the flute or the Greek, Russian and Youba languages.

The interest-match category includes a wide array of themes, including East Asian philosophy, extremist groups, guitar, photography, male liberation, bowling and discussion of books like "The Greening of America" and "Future Shock."

Lewis said the exchange will not list topics that have to do with anything illegal or violent, like bomb making. He said very few of the teachers charge a fee.

The exchange now serves persons from high-school age to senior citizens, with a predominance of persons in their middle 20s and older.

"The beautiful thing is that you don't need formal credentials to be a teacher," Lewis said.

One premise of the experiment is that "a vast number of educational resources go to waste in any given community," he said.

The exchange is one way of making use of this untapped talent, he said.

Each caller is questioned about possible interests to share and subjects he may be able to teach.

"There is no limit to how large our file can grow," Lewis said.

Information from each caller is placed on a 3-by-5 card and cross-referenced.

CHEAP—BUT REAL

"What we have is a cheap but real and thriving alternative to the education establishment which has been the only game in town until now," Detzel said.

Detzel and Lewis agree that a side benefit is the exchange's catalytic effect on people communicating.

"This is a vehicle for getting people together around what they're interested in and the interest promotes self-learning," Lewis said.

The eventual goal is to turn over the project to the community.

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[From Evanston, January 1972]

LEARNING EXCHANGE: SOMETHING FOR ALL

What is your major educational interest? Would you like to learn more about it? If so, The Learning Exchange in Evanston might be able to help. The Exchange matches people in the Chicago metropolitan area who want to teach, learn or share their skills and knowledge.

After six months of operation there are more than 400 topic areas available through the Exchange. The catalogue grows daily as more people hear about and take advantage of the free educational matching service.

Close to 1000 persons are registered—preadolescents to senior citizens. No one is excluded. Anyone who has access to a phone and the desire to learn, teach or share an interest area can use the Exchange.

Teachers include Ph.D's, M.A.'s, B.A.'s, high school graduates, some adults who never finished high school. The Exchange taps onto a vast storehouse of educational potential by providing a way for people to teach and share their skills and knowledge even if they do not have credentials from a four year teachers college.

About 90 per cent of the teachers provide their services free. The Exchange neither encourages nor discourages teachers from charging a fee. Many are willing to teach for the sheer enjoyment that the experience affords them.

Another important and highly popular service offered is the Interest-Match—no teachers, no learners, just people who want to discuss and share a common interest. People are getting together to discuss books, movies, plays, hobbies, organizations, politics, religions, current events, you name it. If a person wants to discuss a subject, but does not feel capable of teaching it, he can list himself in this category.

The Learning Exchange is not a school. It is only an office, two telephones and a small group of volunteer operators. Expenses are very small. The office is provided free by the Evanston Volunteer Bureau. The Bureau uses it during the day and the Exchange uses it in the evening. The telephones are also provided by the Bureau. Since the Exchange has very few outgoing calls (people call in) the phone bill is quite small.

The idea of a Learning Exchange originated at CIDOC in Cuernavaca, Mexico. Denis Detzel, a doctoral student with the Center for Urban Affairs at Northwestern University, was part of a group of innovative educators who brainstormed for alternative educational structures. The Exchange was one of several discussed.

For more information about the free educational matching service call 475–2402 any weekday between 6 p.m. and 10 p.m. or write to the Learning Exchange, 828 Davis Street, Evanston, Illinois 60201.

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## SUPPORT AND NONSUPPORT FOR PRESIDENT'S ACTION IN VIETNAM

Mr. FULBRIGHT. Mr. President, illustrative of how the news can be managed, and the misleading effect of such management, I have noted an article in the Washington Post of Thursday, May 11. That article, by Carroll Kilpatrick, is headlined: "White House Says Support Is 5 or 6 to 1," in favor of the President's decision to mine Haiphong and other harbors.

I believe it would be more credible if the correspondents were given a bag of mail and permitted to make their own estimates.

Lacking that kind of responsible reporting, it might not have been a bad idea to ask some opponent of the President's action how his mail is running.

For the information of the Senate, my mail is running 6.6 to 1 against the President's policy.

As of this morning, I had received 88 letters supporting the President's policy and 597 against his policy.

I ask unanimous consent that Mr. Kilpatrick's article and a statement of my mail averages be printed in the RECORD at this point.

I might note, that I am willing to have anyone count my mail on this subject, so that it can be verified first hand, if he or she so wishes.

There being no objection, the article was ordered to be printed in the RECORD, as follows:

WHITE HOUSE SAYS SUPPORT IS 5 OR 6 TO 1

(By Carroll Kilpatrick)

The White House yesterday claimed "substantial support" for President Nixon's Vietnam decision both in Congress and among the voters despite the sharp criticism that has developed.

Press secretary Ronald L. Ziegler, declaring that the congressional opposition was "largely along party lines," predicted that public support for the President would "permeate Congress sooner or later."

"This is a time when domestic unity is extremely important in bringing about an end to this (Vietnam) conflict," Ziegler said, echoing the President's appeal for unity in his address Monday night.

On Tuesday, the day after the President announced his decision to mine North Vietnamese harbors, the Senate Democratic Caucus condemned his "escalation of the war" and proposed a cutoff of Vietnam funds.

Ziegler said letters, telegrams and telephone calls to the White House supported the President 5 or 6 to 1. He said about 20,000 telegrams have been received and that Western Union said there is a backlog of 17,000 still to be delivered.

Ziegler also said that an Opinion Research Corp. poll showed substantial public support for the President's action.

The poll results also were made public by Senate Republican Leader Hugh Scott (Pa.) and Senate Republican Whip Robert P. Griffin (Mich.).

An Opinion Research Corp. official said in Princeton, N.J., that a telephone poll it conducted Tuesday showed that nearly three out of four Americans support the President's decision to mine the harbors. Only 21 per cent of those surveyed expressed disapproval, 5 per cent had no opinion and 74 per cent said they supported Mr. Nixon's actions.

The findings were based on 702 telephone interviews of persons 18 years of age and older at "several locations" around the county, according to Opinion Research's director of communications, L. C. Milchuk.

Opinion Research has done extensive polling for the GOP in the past.

Milchuck told a reporter yesterday that the firm was not free to name the client who commissioned Tuesday's survey. He did say, however, that the Republican National Committee was not the sponsor.

Ziegler, when asked why the President failed to consult Congress before making his momentous decision, said Mr. Nixon consulted widely among his advisers, made his decision as commander in chief and informed congressional leaders of his decision and why he made it.

Ziegler maintained that the President considered all aspects of the problem and weighed pro and con arguments. In the end, the President had "the full support of his advisers," Ziegler said.

Referring to a report that Secretary of Defense Melvin R. Laird opposed the decision, Ziegler volunteered the comment that the report was untrue. He said Laird "is supportive of this action."

Asked whether Mr. Nixon consulted former President Johnson on the decision, Ziegler said no.

He also said there are no plans for Henry A. Kissinger, assistant for national security affairs, or any other high official to visit the Soviet Union prior to the President's trip scheduled to begin May 22.

Ziegler said plans for the summit meeting are proceeding, but he declined to give any details or any information on the President's schedule. On a trip of this kind details normally are made available much earlier.

A technical advance mission is in Moscow now but Ziegler declined to say what kind of reception it was getting.

At the State Department, spokesman Charles W. Bray said Soviet-American discussions on a variety of issues are continuing in a "straight-forward, serious" way.

These include the strategic arms limitation talks in Helsinki and talks here on commercial maritime issues, a lend-lease settlement and the avoidance of naval incidents at sea.

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## J. EDGAR HOOVER

Mr. COOK. Mr. President, I believe that all Americans are saddened by the death of former director of the Federal Bureau of Investigation, J. Edgar Hoover. Although he came under much criticism recently, he will be remembered for taking an inefficient and politically guided bureau and making it into one of the most respected law enforcement and investigative agencies in the world.

Recently I received a letter from a lawyer and constituent in Kentucky who was also a former special agent in the FBI. Because his sentiments reflect the feelings of so many Americans, I ask unanimous consent that the letter be printed in the RECORD.

There being no objection, the letter was ordered to be printed in the RECORD, as follows:

EWEN, MACKENZIE & PEDEN, P.S.C.,
*Louisville, Ky., May 3, 1972.*

Hon. MARLOW W. COOK,
*U.S. Senator,*
*Old Senate Office Building,*
*Washington, D.C.*

MY DEAR SENATOR COOK: A feeling of great personal loss compels me to set forth some personal reflections occurring to this former Special Agent of the Federal Bureau of Investigation on the occasion of the passing of its Director, Mr. J. Edgar Hoover. I was privileged to have served for but a comparatively short term of something over three years in the Bureau before returning home and to the practice of law. During the last two years of my tour I was assigned to Washington, D.C. It was during this period that I began to know Mr. Hoover as the great leader he was. He was a firm, and often times tough, boss who never lost control in view of the seemingly overwhelming tasks his Bureau was charged to perform. Nevertheless, he was a fair man and, as an investigator, I soon learned that here was an employer to whom I was giving my loyalty, not because I simply wanted to retain my position, but for the sole reason that I respected the principles under which Mr. Hoover, the man, operated. The men and women with whom I worked daily convinced me of this business of principle, not by anything they said, but rather by the lives they led, both professionally and privately. It would, I am sure, be difficult for the average citizen to imagine the loyalty this one individual had among his employees.

It was in this spirit that I terminated my service with the FBI, an experience never to be forgotten and for which I will always remain thankful. In my letter to the Director announcing my intention to resign I wrote:

"It is after deep and serious consideration that I write you with my intention to resign my position as Special Agent of the FBI, effective October 8, 1971. Family considerations and personal reasons compel my separation from, what abides as, the top investigative agency in the world, and my return to private law practice in Louisville, Kentucky.

"A swell of pride in the Bureau and its most important work constrain me to relate to you my sincere appreciation for the opportunity to have served my Country in such a meaningful way.

"In parting, let me say that it has been a unique personal pleasure, shared by relatively few other of my fellow countrymen, to have served under your dedicated leadership. In the most complete sense of the word, you have been and continue to be, a patriot whose life and service to our Government have helped to maintain the American way of life. Your accomplishments and career will forever serve me as a shining example of genuine patriotism, for it is difficult to recall to mind any man who has given so many years of outstanding service to his country as have you, Sir. It is my hope, as I resign, that your leadership, which has become the bench mark of law and order, will continue as long as health permits."

Unfortunately, health was to permit him but a few additional months in office after this letter was written, but the bench mark of which I spoke will remain as long as this society is free.

Critics have murmured that the Director was an enemy of civil liberty. Those of us who served under his dedicated leadership knew this charge to be false for it was at every juncture that we were reminded of the rights of the citizens, rights we had been sworn to protect and defend. It would test the elasticity of the mind's imagination to speculate on the course this country would have taken were it not for the dedicated public life of this great patriot. Can it be logically said that one man so changed the history of an entire country? In this case, I think so. Sure, America has its faults, but in what other country will you find those who disagree with government policy protesting, on the sidewalk in front of the home of the Chief of State, with full license guaranteed by the government against which the protest is being leveled? Yes, Mr. Hoover was the protector of the civil liberty. But for some only time and prospective will cast this man as the true champion of individual rights that he was.

His accomplishment and career have left an indelible imprint on the citizens of this great country whom he has so faithfully served during his lifetime.

I am proud to have been associated with Mr. Hoover's FBI, and it is my sincere hope that the strength, character and principles which guided this great man and which he built into his organization will continue as the Bureau's compass as it sets sail into the uncharted waters of the future under the flag of a new skipper.

For my part, I would say, thank you Mr. Hoover for the opportunity to have walked with you for a short while and for the liberty and freedom my family and I today enjoy.

Senator, I thank you for allowing me to share these thoughts with you and I would hope that they would be shared with as many of my fellow citizens as possible as we pause to reflect at this most solemn moment.

Respectfully yours,

CHARLES E. RICKETT, Jr.

## THE PRESIDENT'S POLICY IN VIETNAM

Mr. BENNETT. Mr. President, today the mines in the harbors of North Vietnam have been activated and the deadline for ships to leave the harbors has passed, the Soviet Union has taken a position, and the President's policy has become a reality. I cannot stress enough the need for unity and support for the President in this hour of stress.

The President did not make the decision to mine these ports easily nor callously, as some Members of this body have implied. He has selected this difficult course of action because he believes, and I agree with him, that there is only one way to bring a lasting peace in Indochina, and that is to end aggression. Mr. Nixon could have withdrawn all American military support immediately and thrown up his hands in despair and defeat as his political opponents appear so willing to do. But he does not believe that to allow overt aggression to succeed in Indochina will bring a lasting peace.

President Nixon has offered the North Vietnamese the most generous and wide-ranging peace proposals offered in the course of this conflict. He has offered a complete American withdrawal and an end to all acts of force when the release of American prisoners and an internationally supervised cease-fire have been effected. This is a realistic basis on which to negotiate and not simply demand that the United States turn South Vietnam over to them. The combination of the President's military moves and his generous offer for peace has great potential for making peace a reality in Indochina. However, the North and its allies will have no will and no need to negotiate if the President's policies are defeated here in the United States. The Communist nations of the world and the allies of North Vietnam are watching us closely. Every sign of weakness in the national resolve, every additional pressure which is put upon the President only adds to their assumption that they will not have to agree to a negotiated settlement and peace. Every thoughtless action of violent dissent reinforces their belief that they will not have to negotiate a settlement for the Americans will soon leave and the North will have its way.

Mr. President, I am not saying that freedom of speech or expression should be restricted in any sense. I am saying that those who automatically responded to the President with criticism without giving his new policy a chance, should have examined the facts before making their statements. It is time to tone down the rhetoric of politics and give the President's new peace proposals a chance. A show of unity is vital today, and I encourage all Americans to stand behind President Nixon in his courageous attempt to end his tragic and costly war with a peace based on negotiation and compromise, not armed force.

## EDUCATION OF VIETNAM VETERANS

Mr. HARTKE. Mr. President, the Vietnam veteran should be the subject of our deepest concern, both in a patriotic and pragmatic sense. While honoring those who served, we should also assure them of a civilian life that is useful and productive, in anticipation of a brighter national promise.

Continued education is of paramount importance to a large segment of Vietnam era servicemen, but to date they have been given short shrift. Veterans have come home to government educational benefits that to them appear to be born of parsimony and obvious indifference, something I hope the Senate will correct this year through comprehensive legislation with adequate benefit levels.

Until recently, they also found many colleges unreceptive and unwilling to tailor to veteran needs. In this area, there is now reason for encouragement. Recently, Dr. John P. Mallan Jr., director of the American Association of Junior Colleges' program for servicemen and veterans appeared before the Senate Veterans' Affairs Committee, which I am privileged to chair. Dr. Mallan told us of the effort and accomplishment made by community colleges in enrolling and aiding the veteran.

Further evidence of the academic community's interest recently appeared in the Chronicle of Higher Education, in an article entitled, "Community Colleges Lead the Way in Stepping Up Programs To Attract Veterans of the Vietnamese War," written by Cheryl Fields. I ask unanimous consent that the article be printed in the RECORD.

There being no objection, the article was ordered to be printed in the RECORD, as follows:

COMMUNITY COLLEGES LEAD THE WAY IN STEPPING UP PROGRAMS TO ATTRACT VETERANS OF VIETNAM WAR

(By Cheryl M. Fields)

WASHINGTON.—The Vietnam veteran is no longer a forgotten man on many U.S. campuses.

Just a year ago many colleges and universities reported they were not doing anything

special to attract the thousands of Vietnam veterans slipping quietly back into society each month.

Now dozens of institutions are actively recruiting servicemen with offers of information, counseling, and financial aid.

Community colleges have led the way, with their generally less stringent admissions policies and lower costs. Also, the American Association of Junior Colleges has encouraged its members to use G.I. Bill provisions authorizing remedial and tutorial aid for veterans, in addition to their regular college benefits.

The provisions are aimed particularly at attracting disadvantaged and minority-group veterans to higher education. A year ago many four-year colleges reported that their veteran populations were increasing, but that their student veterans were mainly men who already had some college or had been planning on college before they were drafted, or who met normal admissions standards.

REQUIREMENTS EASED

Since that time, however, steps have been taken to attract a broader range of veterans to many campuses. Numerous institutions have waived or at least eased admissions requirements for veterans, appointed veterans' counselors, encouraged G.I. clubs, and provided catch-up courses and more financial help.

As of last month, about 760,000 veterans were attending college under the G.I. Bill, according to the Veterans Administration.

To make recruitment of veterans more than a hit-or-miss affair, nearly 300 junior colleges and several hundred four-year colleges have arranged to obtain from American Legion posts the names of all veterans returning to their states each month. The four-year colleges include 700 members of the National Council of Independent Colleges and Universities, an affiliate of the Association of American Colleges.

Their action will allow the most systematic recruitment of servicemen to date.

A number of institutions and some states, however already have aggressive, coordinated programs to attract veterans to college campuses and to help them stay there.

PERSONAL ATTENTION

For example, within two or three weeks after a veteran returns home to Rochester, N.Y., he receives a letter and brochure from Monroe Community College. A week later one of seven recruiters from the college—all of whom are student veterans themselves—follows up with a telephone call.

If a veteran is interested in attending the college, a recruiter goes to his home, helps him fill out college forms, and explains how to apply for G.I. Bill benefits. Or the recruiter invites the veteran to the campus to sit in on some classes and to talk with other students.

This goes a long way toward easing the veteran's fears that he can't make it in college because he has been away from classes for a long time or because he earned poor grades in high school, says Charles A. Adimaro, coordinator of veterans' services at Monroe. The college has an "opendoor" admissions policy for all veterans with a high school diploma or an equivalency certificate, and "once they are on campus, we find many can do dean's-list work," Mr. Adimaro said.

REFRESHER COURSES

The college has a general studies program where veterans can take refresher courses in mathematics, reading, and writing while receiving G.I. Bill benefits. The college also uses the G.I. Bill tutorial program. If the college certifies that a veteran needs tutoring, he can get up to $50 per month to pay tutors.

In just two years, Monroe's services have helped increase the number of veterans enrolled there from 87 to 1,100.

Many services like those that Monroe provides, plus some others, eventually will be included in what is perhaps the most ambitious veterans' recruitment project to date. A consortium of 22 colleges and universities in the metropolitan Detroit area has begun working to increase their enrollment of veterans by at least 5,000 next fall, a 100 per cent increase.

"The Vietnam-era veteran with 18 months' service has a $6,000 scholarship available to him," says Clarence Brown, director of the consortium, called the Center for the Education of Returning Veterans. "It's our job to see that he gets to use that scholarship."

Concerned by Veterans Administration statistics showing that only 15 per cent of an estimated 225,000 Vietnam veterans in Michigan have filed claims for educational benefits, the consortium plans to hire 75 student veterans to work as recruiters 20 hours per week.

Using the American Legion's lists of veterans, and perhaps even stationing themselves in Michigan's state employment offices, the recruiters will try to contact each returning serviceman. If he's interested in more education, they will refer him to a veterans' counselor at the participating institution nearest his home.

$120,000 IN GRANTS

The Michigan project has received a $65,000 grant from the National League of Cities and U.S. Conference of Mayors. It also has received $30,000 from Detroit and $30,000 from nearby Pontiac under the Federal Emergency Employment Act.

Passed last summer, the act earmarks a third of its $1-billion to help veterans get public service jobs. The consortium will use the funds to hire student veterans as recruiters, thus giving them part-time jobs and reaching other veterans at the same time.

Other large-scale efforts to systematically recruit veterans for college include a Pennsylvania program that maintains 60 counseling centers manned by veterans at various institutions in the state.

Supported by veterans' clubs on the campuses, the counseling centers obtain lists of recently discharged veterans, and student veterans try to contact each one to offer informal educational counseling.

Illinois has just announced a program designed to encourage more veterans to use their G.I. benefits. Some 70 student veterans are already working at 14 community colleges throughout Illinois to recruit fellow G.I.'s for college, a state official says.

SPECIAL EFFORTS

Veterans from minority groups, in particular, often need to be encouraged to use their G.I. Bill benefits. Several campuses are making special efforts to recruit black veterans, and the American Association of Junior Colleges and El Paso Community College recently announced a program to develop new educational programs to specifically meet the needs of Mexican-American veterans.

Meanwhile, several institutions have modified their admissions requirements for veterans. Fordham University, for example, allows veterans who don't meet regular admissions standards to enroll in a special liberal arts curriculum leading to a regular bachelor of arts degree. At least 350 students are participating in the program.

Michigan State University and the Universities of Masachusetts and Missouri also have eased entrance requirements for veterans.

Manhattan College has an open-admissions policy for veterans. So have Rosary Hill College in Buffalo, N.Y., and Duquesne University in Pittsburgh.

After veterans decide to enroll in college, however, finances and the need for part-time work are still major obstacles.

The basic G.I. Bill educational allotment for an unmarried veteran would be increased from $175 a month to $200 under new legislation approved by the House of Representatives, and there is the possibility of larger increases being voted by the Senate.

An increase in the range of $25 per month probably would not help many veterans substantially, however, some veterans counselors say, given the cost of living and rising educational expenses.

TUITION WAIVERS

To help combat this problem, a few states and some institutions have agreed to waive tuition for veterans either fully or partially.

Illinois and Massachusetts provide tuition waivers at state-supported institutions for G.I.'s who were state residents before they entered the service. Texas allows tuition waivers at state institutions after a veteran's maximum 36 months of G.I. benefits are exhausted.

Several colleges have agreed to deferred tuition plans for veterans, allowing them to postpone for a month or two the usual beginning-of-semester expenses until their G.I. benefit checks start arriving regularly.

The new G.I. Bill legislation pending in Congress also would allow a month's advance payment of benefits to help veterans pay school expenses on time.

HELP TO GET JOBS

Veterans' counselors at many colleges, including the University of Florida, try to help veterans get part-time jobs to stretch their federal benefits. This isn't easy, though, says Jay Stormer, assistant dean for veterans' affairs at the University of Florida at Gainesville.

Not many jobs are available, he notes, and veterans are competing with many other students for those that do exist.

Because of veterans' difficulties in getting part-time jobs in many areas, the National League of Cities is sponsoring projects in 13 cities to help student veterans get such jobs, particularly in government agencies.

PROBLEMS OF PRIVATE COLLEGES

A recent survey of 620 private colleges revealed that slightly more than 20 per cent of the Vietnam era veterans in college have enrolled in independent colleges. This compares with 50 per cent after World War II, when costs at private colleges were competitive with those at public colleges, says Howard E. Holcomb, director of federal relations at the Association of American Colleges.

A proposal added recently to the Senate version of the higher education bill, if approved and financed, could encourage colleges to enroll more veterans and could funnel an estimated $180-million to institutions. It would entitle a college to grants of at least $300 per veteran if the college increased its enrollment of veterans by 10 per cent in the first year and 5 per cent each year thereafter through 1975. The colleges also would have to provide special recruitment and counseling services for the veterans.

## ENVIRONMENTAL IMPACT OF TRANS-ALASKA PIPELINE

Mr. CASE. Mr. President, three leading environmental groups have submitted a four-volume compilation of 56 separate studies of the proposed trans-Alaska oil pipeline to the Department of the Interior.

The studies, compiled by the Wilderness Society, the Environmental Defense Fund, and the Friend of the Earth, comprise a critical analysis of the Interior Department's revised environmental impact statement on the pipeline.

In addition to many specific and valid points made by the various scientists, engineers, and economists who submitted the studies, a few general threads run through the comments.

The common points made in many of the studies are that insufficient information now exists on which to base a ra-

tional decision, that the Department's environmental impact statement avoids discussion of practical problems that will be faced in the field and at sea if the project is approved, that environmental control once the project is approved, would be virtually nonexistent, and that alternative routes, including a Canadian pipeline, were not adequately explored.

The comments on marine impact are especially significant because this is an area of impact that could be largely avoided by an all-land route through Canada.

One of the studies on marine impact was submitted by Max Blumer, senior specialist at the Woods Hole Oceanographic Institution.

In his study, Dr. Blumer notes that we must determine in advance what levels of environmental deterioration we are willing to accept if we are to prevent unchecked deterioration of our marine environment. He points out that the effort expended to develop the standards needed in this area would be applicable to other areas, such as the Continental Shelf along the eastern seaboard, where they are needed.

I ask unanimous consent that Dr. Blumer's study be printed in the RECORD at the conclusion of my remarks.

Another of the studies was submitted by Dr. David Hickok, director of the sea grant program at the University of Alaska.

Dr. Hickok says the range of alternatives available to the Alaska pipeline is too wide to permit all of them to be investigated in great depth. But he points out that the Canadian alternative route has been given considerable study by both industry and the Canadian Government and the environmental advantages of this route warrants more thorough investigation than is evidenced in the revised impact statement.

I ask unanimous consent that Dr. Hickok's study also be printed in the RECORD.

Also, I ask unanimous consent to have printed in the RECORD a letter from the Sierra Club, dated April 17, 1972, to Mr. Russell E. Train, Chairman, Council on Environmental Quality.

There being no objection, the items were ordered to be printed in the RECORD, as follows:

INSTITUTION,
*Woods Hole, Mass., April 27, 1972.*

Hon. ROGERS C. B. MORTON,
*Secretary of the Interior,*
*Washington, D.C.*

DEAR SECRETARY MORTON: I have read with interest the Environmental Impact Statement for the proposed Trans-Alaska Pipeline, especially the sections dealing with the impact on the marine environment, inshore and offshore.

The statement in Appendix to Volume IV (Effects of Oil on Marine Ecosystems) gives a fair appraisal of the present knowledge in this area. This section, in the context of the remainder of the statement, leaves no doubt that environmental deterioration will follow the establishment of the proposed Trans-Alaska Pipeline.

Environmental deterioration will result from anticipated routine discharges and from unanticipated but virtually assured accidental discharges, onshore and offshore.

In view of the expected environmental deterioration, the Impact Statement should provide the mechanisms to establish baselines previous to the operation of the pipeline, mechanisms to establish the maximum permissible pollution levels, and mechanisms to arrest a continued rise of the pollution levels, if the permissible levels are approached or exceeded locally. The Impact Statement fails to provide or suggest these mechanisms.

I wish to elaborate on these points.

1. BASELINES

All marine organisms, waters and sediments contain hydrocarbons from biological sources, or from fossil fuels, or from both. In a clean environment, the former predominate; as pollution levels rise, the contribution from fossil fuels rises. The fossil fuel hydrocarbons are responsible, among other factors, for the environmental deterioration.

Hydrocarbons in the sea are persistent; studies in progress at Woods Hole continue to provide evidence for spilled fuel oil and whole crude oils for periods now exceeding 2½ and 1½ years, respectively (enclosures). Thus, oil pollution leads to a buildup of fossil fuel hydrocarbons in the environment. This buildup can only be monitored if presite baselines are known and if monitoring continues during the entire period of oil port operation.

I am addressing myself to this question as a hydrocarbon chemist; a biologist would make a similar statement regarding the necessity of monitoring the floral and faunal state before and during port operation.

The task of chemical monitoring is straightforward; sensitive and reliable techniques exist, no further methods development is required.[1]

2. PERMISSIBLE POLLUTION LEVELS

Oil port operation in a presently clean environment will lead to a buildup of fossil fuel hydrocarbons in the water, in the sediments and in organisms. This may result in reduced productivity, in an impoverishment of the environment and in a buildup of hydrocarbons in the food-chain; the latter may eventually affect the consumer.

If we are not to permit unchecked deterioration of a presently clean and productive environment, we must establish the degree of environmental degradation and the pollution levels which we are willing to accept. This task can be aided by making use of existing experience. Many inshore and offshore areas of our coastal zone, in different climatic regions, are exposed to oil pollution. A correlation of the existing pollution levels in these areas with the environmental state and with the pollution levels in sea food is a feasible and necessary part of this task. It will require also the establishment of maximum permissible levels of fossil fuel contamination in food.

This is a more extensive but not more difficult task than the establishment of pollution baselines.[2] The effort expended is relevant to, and the standards developed are needed and applicable in, other marine areas which may be subjected to increasing oil pollution in the near future, e.g. the continental shelf along the eastern seaboard.

3. CONTROL OF POLLUTION LEVELS

To provide a measure of true environmental protection, the results of the baseline study and of the continued operational survery must be assessed in terms of the established maximum permissible pollution levels. If the fossil fuel level in the environment or the environmental deterioration exceed the maximum permissible levels, the oil influx to the environment must be reduced, e.g. through better control of routine or of accidental discharges, through appropriate recovery techniques or through the reduction of oil throughput.

A precedent exists in U.S. oil shale development policy. There, the U.S. Department of the interior requires ecological surveys before and during shale plant operations, and production quotas will be tied directly to the environmental status.[3]

I believe that granting the permit at this time would provide no mechanism to detect rapidly the unanticipated environmental deterioration and to arrest the rise of the pollution level in the environment and in fisheries products.

Denial of the permit would eliminate entirely the pollution, environmental deterioration and to arrest the rise of the pollution level in the environment and in fisheries products.

Denial of the permit would eliminate entirely the pollution, environmental degradation and destruction of fisheries resources, inshore and offshore in Alaska, on the high seas and in the waters of the contiguous United States, that would otherwise result from the transport of the Alaskan oil.

Deferral of the permit, in anticipation of later granting, could provide the time to carry out the necessary baseline studies in Alaska, to assess the environmental effects of oil in terms of our experience in presently polluted areas, and to establish maximum permissible oil pollution levels in the environment and in food.

To a large extent, this effort is possible with existing chemical and biological methods. The results are applicable to other areas where production is anticipated; the availability of such data and standards should hasten substantially decisions which will have to be made elsewhere.

Sincerely yours,

MAX BLUMER,
*Senior Scientist.*

FOOTNOTES

[1] We are involved in a study of the effect and fate of fuel oil spilled in 1969 Buzzards Bay, Massachusetts. This study, now in its third year, involves repetitive chemical and biological analyses of samples from 15 stations, offshore and in the marshes. The chemical analyses are carried out by one chemist and one assistant, both devoting only part of their time to this effort. The biological effort involves approximately twice the personnel, but it is less expensive in terms of capital equipment which is required.

[2] We envisage coordinated chemical and biological studies, similar to our Buzzards Bay survey; these should be carried out in different climatic regimes and in areas which are affected by oil production, by refining, and by oil transport. Sampling should extend from the most heavily affected regions outward to clean control areas.

[3] I refer to policy information presented in a lecture by Dr. R. T. Stone, U.S. Department of the Interior, at the International Symposium on Science and Technology of Oil Shale, Curitiba, Brazil, December 12–17, 1971 Further, the Draft, Environmental Impact Statement for the Prototype Oil Shale Leasing Program, U.S. Department of the Interior states (p. IV–9):

"An important objective of this prototype program is to compare the actual environmental impact with the projected impact. To this end, the air and water quality would be measured and assessments made of the environmental consequences by both the operator and Government representatives. If it is found that the operations do not meet the standards specified in the lease, an immediate adjustment of the operations would be made. Failure to comply in a reasonable time could result in cancellation of the lease. Where operations cause unforeseen environmental effects, operating plan requirements to control such effects would be changed to the maximum extent possible, consistent with the terms of the lease."

SEA GRANT PROGRAM,
UNIVERSITY OF ALASKA,
*College, Alaska, May 1, 1972.*

Hon. ROGERS C. B. MORTON,
*Secretary of the Interior,*
*Interior Building,*
*Washington, D.C.*

DEAR MR. SECRETARY: We have reviewed the final impact Statement on the proposed Trans-Alaska pipeline and find it to be an imposing document. Much study and effort have obviously gone into its preparation. So much new material has been presented since the 1970 draft, particularly relative to the marine shipping of oil and the potential Canadian pipeline alternatives, that we believe a public hearing to be a necessary part of a decision which will have such an impact on so many North Americans.

We are concerned with several aspects of the Statement, particularly as they relate to marine systems.

For instance, natural physical systems are discussed in detail in Volume 2 in terms of physiography, geology, climate, air quality, water resources and insects as they occur along the terrestial portion of the pipeline route. Not until the fish and wildlife section on page 150, however, is mention made of marine environments of the Beaufort Sea, and uncomprehensively at that. A considerable body of existing knowledge has not been used.

For example the only discussion of the system of barrier islands and lagoons that extends intermittently from Point Barrow to the Canadian border is in relation to birds. We can find no discussion until Volume 5 of the possible functions of the lagoons as nursery areas for fish, sea mammals, plankton and other lower elements of the food chain or as protection for an erodable shoreline.

Several alternative shipping routes have been seriously proposed that would involve the Beaufort Sea, gravel has already been extracted from one or more of these barrier islands and recent communications[1] discuss possibly irreversible impacts on the albedo of the Arctic ice pack that could occur from oil spills. Although these communications are discussed in Volume 4 (pp. 136–138), we believe the potentially irreversible and far-reaching nature of the impact has not been brought out. The point is that consideration of the physical and chemical environment of the Beaufort Sea would seem to warrant more than the 1½ pages allocated to it.

We note also that the discussion of impacts that cannot be avoided, Beaufort Sea (Vol. 4, pp. 523–541), considers only marine mammals. We believe many other forms varying from plankton to birds would be subjected to unavoidable impacts.

These comments on the Beaufort Sea are not new considerations. The record of the August 29–30, 1969 hearing will show that I brought these matters up at that time.

Although there are many imponderable factors involved in an oil spill in a marine environment that make precise prediction of its effects impossible, we believe some illustrative example should be provided that would illustrate graphically the extent and duration of impacts from a hypothetical spill on all segments of the environment. A major spill on the Sagavanirktok River, Port Valdez and on the shipping lanes off the coast of British Columbia might provide good illustrations. Nowhere in the statement can we find a clear picture of what would happen to the environment of a particular ocean or embayment if "X" barrels of crude oil were spilled at point "A" at "H" stage of the tide and under "W" weather conditions. Where would the oil go, how would it affect various organisms and what would be the secondary and long term effects on the communities involved? What cleanup action is visualized and how effective would it be? The problem here, of course, is the lack of physical circulation knowledge—winds, tides, currents which make the impact of these situations difficult, if not impossible, to answer.

In reviewing volume 3, we conclude that information on the marine environments from Valdez to West coast ports is preliminary, at best. For instance, winds in Port Valdez are discussed (p. 103) and, because of the inapplicability of records from the existing station, it is recommended that a recording wind station be placed in an exposed location in Valdez Arm. This has not been done, even though Port Valdez and Valdez Arm are known to be subject to extreme winds and the location proposed for the terminal and tank farm has been unchanged for nearly three years.

Resources in Prince William Sound are knows to be of high value and the possibility of major spills is acknowledged. We believe, therefore, that the limited information on tidal currents, water chemistry, distribution of all elements of the marine biota and their vulnerability to oil should be greatly expanded before the effects of the proposed development can be appraised. For instance, the inadequacy of present information is illustrated by the statement (Vol. 3, p. 206) that "the waters of Prince William Sound are probably represented by the Gulf of Alaska source waters as modified by local runoff". What, for instance, is the effect of upwelling and seasonal oxygen depletion in some fiords on this relationship?

We believe that there is need for detailed comprehensive studies throughout Prince William Sound, the Gulf of Alaska and marine tanker routes of water chemistry, temperature, circulation and salinity and seasonal distribution and abundance of all life forms ranging from plankton and kelp to tufted puffins, sea otters and black-tailed deer.

More information is needed on the relationship between various elements in the food chain. For example, what would be the impact on the ecosystem if one or more forms susceptible to oil pollution were replaced by an oil resistant competitor? We recognize that answers to such involved questions will require extensive long-term research, but also believe the deficiencies in present knowledge should be acknowledged and necessary studies outlined.

We have reviewed the section on alternatives to the proposed action and agree that the wide range of available alternatives could not investigated in great depth. The Canadian pipeline alternatives, however, have been given considerable study by both industry and the Canadian government. One might also follow a corridor already proposed for a gas line and any of them would provide a means of avoiding the hazards of the marine routes from Valdez to West Coast ports. We believe that the environmental aspects of these routes, such as impact on fish and wildlife and wilderness warrant more thorough investigation than is evidenced by the impact statement which appears to result largely from personal interviews and a review of the literature.

We were also unable to determine how much the requirement for gravel would be reduced by selection of any of the Candian routes which would presumably not require construction of a secondary highway comparable to the one planned to run from Livengood to Prudhoe Bay. We did not find any evidence that a highway constructed to state secondary standards is a necessary, or even desirable adjunct to construction or operation and maintenance of a pipeline.

We are concerned about contingency plans and believe there is sufficient experience in cleaning up large oil spills under weather conditions comparable to those expected in the Beaufort Sea and along the tanker routes from Valdez to West Coast ports to warrant some conclusions regarding their probable efficiency. There is a discussion of this problem as it related to operation on the outer continental shelf (Vol. 5, p. 306) that should apply equally well to spills resulting from tanker shipment of oil. Large spills probably will occur and complete cleanup would seem to be impossible even if the 12-hour delay now permitted by the Coast Guard for full response (Vol. 4, p. 484) were eliminated.

We believe also that the statement on p. 485 that the oil industry and Alyeska intend to incorporate improvements in spill control technology will do little to reduce oil spills unless the intent is implemented.

Evidence is also accumulating which indicates that the toxic elements from crude oil are absorbed into water very rapidly and even full and immediate cleanup of residues would prevent only part of the damage.

We can only conclude that effective control of impact from oil spills depends on their prevention. The statement is made (Vol. 4, p. 475) that the Alyeska system would probably utilize only the most modern tankers available. We cannot find in the impact statement any assurance that this will be so.

Even if it were so, it is becoming apparent that if the oceans of the world are to remain productive and useful, a complete worldwide international overhaul of standards for construction, maintenance and operation of tankships will be required.

We do not suggest that such standards be required of Alyeska alone, believing this would be an unrealistic imposition on one segment of a competitive industry. We do believe, however, that if the decision is made to permit shipment of Prudhoe Bay oil on salt water, it is incumbent on the government of the United States to take energetic steps, either through the United Nations or similar organizations, to bring about safety standards comparable to those of the airline industry, at the same time recognizing that this would impose an increase in costs to the consumer.

We hope these comments prove to be useful and do not intend to be critical of the personnel involved in assembling this statement. We recognize that it was a tremendous task carried out under difficult conditions.

Sincerely,

DAVID M. HICKOK,
*Director.*

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SIERRA CLUB,
*San Francisco, Calif., April 17, 1972.*

Mr. RUSSELL E. TRAIN,
*Chairman, Council on Environmental Quality, Washington, D.C.*

DEAR MR. TRAIN: We have received a copy of the environmental impact statement on the proposed Trans-Alaska Pipeline System and the accompanying volumes on the economic and security aspects of the project. The following is our commentary on this statement.

In contrast to earlier attempts to prepare an impact statement, this version is more comprehensive and is clearly more in keeping with the requirements of the National Environmental Policy Act and thus can aid the decision-making process.

We hasten to add that it is not a perfect statement. It is much too long, and the same information could have been conveyed in perhaps a third of the space.

It is not our present purpose to make a detailed commentary on the inadequacies of the analysis of environmental impact. We are certain that other environmentalists will cover many of these. However, two general comments along these lines are in order.

First, basic information is still lacking. For instance, the crucial experiments on large mammals are admittedly incomplete, and tests on pipe under Arctic conditions remain inadequate.

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[1] Campbell, W. J. and S. Martin 1971. A note on the dynamics of oil in the Arctic Ocean and Ramseier, R. O. 1971. An overview of potential oil pollution in the High Arctic.

Second, a still greater fault of the statement lies in its failure to comprehend fully the magnitude of the potential harm. A list of impacts is presented, but their importance is not completely recognized. While attempts are made to quantify the impacts of the pipeline and its related systems, this process has not been carried to completion. Potential future uses and probable future importance of resources that would be harmed or threatened are not fully evaluated, and these endangered resources are not weighed by reference to what is happening to similar assets elsewhere. As a result, the increasing importance and irreplaceable nature of Alaskan wilderness values and the marine environment of Prince William Sound are not fully recognized.

In spite of these (and other) failings, the statement does outline the major impacts of the pipeline and its related systems. From our point of view, these are the following:

(1) The largest remaining wilderness in the United States would be cut in half and its character forever changed.

(2) Public access to northern Alaska would be considerably accelerated, both as a direct and indirect result of pipeline construction and operation. This would also threaten the wilderness qualities of this area and render difficult the orderly and sensitive growth of potentially valuable developments that could benefit the state for a long time to come.

(3) The construction and operation of the pipeline and its associated road, construction pad, and oil field in this permafrost-laden area will be difficult and expensive, and would result in considerable erosion, sliding, drainage pattern change, and siltation.

(4) Pipeline construction would have a detrimental effect on the vegetation, destroying over 61 square miles of surface cover. Revegetation proves to be exceedingly difficult in the Arctic.

(5) Pipeline construction will have a negative effect on freshwater life and fisheries because of unavoidable siltation.

(6) The extensive requirements for construction materials (83 million cubic yards) will place a heavy burden on gravel deposits near the construction right-of-way.

(7) Despite all precautions, heat loss from the pipeline would cause significant changes over a wide area, particularly in drainage patterns.

(8) The noise and activity of construction would reduce the size of the habitat for several species of large mammals and would indirectly and significantly increase the hunting pressure upon them. Aerial transportation for pipeline operations, maintenance, and surveillance would cause continuing disruption.

(9) The pipeline itself, elevated in many areas to avoid problems with permafrost, would create a virtually uncrossable barrier to the migrations of several species of large mammals.

(10) Oil terminal operations at Valdez and recipient ports on the west coast would contribute to the degradation of the marine environment, for a series of large and small oil spills are inevitable, as well as continuing water contamination by ballast containing the soluble components of oil. This pollution would be particularly hard on the relatively unspoiled marine environment and valuable fisheries of Prince William Sound.

(11) The pipeline and associated systems would directly commit a total of 602,000 acres of Alaskan land to development.

(12) There would always remain the threat of oil spills from pipeline rupture due to earth quakes, landslides, differential land settlement in unstable soils, various permafrost effects, and stream erosion.

(13) The siting of several of the pump stations remains in question because of soil instability. Pump station operation would cause industrial-level noise, with unknown effects on wildlife, and they would emit from 15 to 150 pounds of hydrocarbons per hour into the air to the particular detriment of delicate Arctic lichens.

(14) The pipeline and oil development would be no panacea to the Alaskan economy. The result would be further inflation and continuing unemployment, in spite of the new jobs available in construction, and it would result in a surge in unemployment when pipeline construction is completed. The increased demand for goods and services would place heavy burdens on the Alaskan economy, and on the state government in advance of any revenues from oil production.

It is clear from the environmental impact statement that a route through Canada would be better from a variety of points of view than a trans-Alaskan route (although we believe that neither route would be as desirable as halting North Slope development). A Canadian route would bring North Slope oil closer to where it is most needed, the areas of the country most dependent on outside petroleum sources. It would also be safer from both environmental and physical security points of view, avoiding risky marine transport and the earthquake belt of southern Alaska.

We note that a Canadian route is already under serious consideration by oil consortia and by the Canadian government in connection with oil and gas transport from the Canadian Arctic and gas transport from the North Slope. Thus, in reality, a Canadian route is an alternative to two routes—one through Alaska and one through Canada.

From an overall point of view, we feel that the environmental impacts of the pipeline system are especially detrimental, particularly in light of the fact that the assets in jeopardy are ones which are in short supply in all parts of the world and are under attack everywhere. In other words, the environmental price is great. This leads us to ask if the system is really so needed that we must pay such a price.

We believe it is a mistake to maintain that an increase in energy consumption is equivalent to improving our well-being. The principles of ecology tell us that unlimited growth in anything is impossible—be it population or energy. We are already straining our energy resources, and we have begun to borrow against an uncertain future. We are depleting our non-renewable energy resources at an alarming rate. We also easily forget that all energy pollutes, and the more energy we use, the more pollution we create. We are already paying a heavy price in lost land, and dirty air and water.

We need new public policies immediately that call for:

(1) using less energy in the future, and using it less wastefully now;

(2) developing new, better sources of energy;

(3) halting the destruction taking place for the sake of energy—stripmining, loss of wilderness, oil contamination of the marine environment, thermal and air pollution from refineries and power generating plants; and

(4) conservation of our dwindling non-renewable energy resources.

The environmental impact statement assumes unlimited growth in energy consumption. However, now is an appropriate time to begin educating the public toward changing their attitudes. At maximum capacity in the 1980's, the pipeline system would be able to deliver only two million barrels of oil per day to the "lower 48" states, yielding only about 4% of our total energy requirement and about 9% of our oil requirement. In the decade until then, we can make up for this amount by developing alternate energy sources by curtailing growth rates in energy use. Reducing the demand for energy is not going to be easy. A major public commitment to find ways to be less wasteful of energy will be required.

The impact statement also claims that no other energy source can fill our needs as cheaply and as well as oil. This reasoning does not take into account the fact that oil is both a polluting and a non-renewable resource. In the past, the cost of oil did not include the cost of the pollution caused by the oil from the time it is pumped from the ground to the time it is used. And because oil is a non-renewable resource, we must include the social cost of having less oil available for the future and the resulting cost of developing substitutes. These environmental costs—pollution and depletion—when added to the price of oil, make us realize that we pay more than we may think. And if we do not take these costs into account, we undersell other energy sources.

As you know, we are already running short of natural gas. In spite of the fact that peak production is now occurring, natural gas is not available to everyone who would like to use it, and prices are rising. When the peak in oil production is reached, probably within 50 years, it will be accompanied by similar restrictions.

Moreover, the choice is not to find a single, simple substitute for North Slope oil, as the environmental impact statement implies. Rather, the choice is to find a combination of policies and substitutes that will get us beyond our present impasse. There is no single substitute, but we can find the correct combination of policy changes and alternatives. The four billion dollars that would be spent on the pipeline would be better spent in research with more far-reaching and long-term results.

Coal gasification and liquefaction and nuclear and geothermal power all offer short-term alternatives. Nuclear breeder reactors, nuclear fusion, and solar energy offer the prospect of significant amounts of power further in the future. Processes such as topping cycles and magnetohydrodynamics will allow us to make more efficient use of fossil fuels. Technological advances will allow us to extract more oil from existing fields.

We cannot afford to wait until we run out of oil to develop new, less polluting alternatives. We must make a major commitment now instead of trying to postpone the inevitable by taking needless risks with our environment in an effort to drain what remains of the earth's oil supply.

We take this opportunity to call upon the President to establish a Commission on Energy and the American Future to examine the energy growth of our country and to recommend policies that will carry us not only for decades, but for centuries. Large scale energy development, like that on Alaska's North Slope, should await the outcome of opportunities to achieve a broader consensus of our society.

Our national security, according to the environmental impact statement, calls for the immediate development of North Slope oil. This argument assumes that it is in the best interest of our country to be a self-dependent as possible, as quickly as possible, in case of the sudden unavailability of oil from the eastern hemisphere. For this reason, the United States has a restrictive oil import policy designed to promote domestic oil development.

We believe this argument is questionable. First, it does not take into account the long-term cost to our national security of a depleted and no longer available domestic oil resource. Second, even at maximum capacity of two million barrels per day, North Slope oil would not make much difference in our dependence upon insecure eastern hemisphere oil which would still amount to about one-third of all oil consumed. Indeed, the range in uncertainty of predictions of the extent of our dependence on eastern hemisphere oil is four times greater than the extent to which North Slope oil could reduce that dependence. Finally, the parts of

our country most dependent upon eastern hemisphere oil—the east and the midwest—would benefit only indirectly from Alaskan oil (unless a pipeline through Canada were selected).

Moreover, there are better solutions to the problem of "insecure" foreign sources of oil as well. These include: (1) a federal program of oil exploration, placing new discoveries in reserve until needed, (2) federal purchase of domestic oil fields, and (3) storage of oil in salt domes and previously depleted oil fields until needed. Storage could be accomplished with less expensive foreign oil, allowing us to remove restrictive oil import quotas. Such reserves could also "buy time" to develop North Slope and offshore fields if we really got into trouble.

Much has changed from the time the trans-Alaska pipeline was first proposed. The plan has changed, but more importantly, our view of what constitutes relevant environmental considerations has changed.

The basic research carried out by the Department of the Interior and the Alyeska Pipeline Service Company will ultimately be of great benefit to business, government, and all citizens. We must compliment them for the amount of time and effort that has gone into these studies. It is true that some environmental problems have been overcome. It is true that everyone has now agreed to take care of the Alaskan environment and to do their best to minimize the harm that would take place. But care and minimization are not enough.

In evaluating the environmental impact statement, we must try

(1) not to under-estimate the magnitude of the damage that would occur to Alaska and the marine environment as the result of the pipeline,

(2) not to over-estimate our energy need for North Slope oil nor to under-estimate our ability to change public policies and actions in order to reduce our need for energy,

(3) not over-estimate the immediate need for North Slope oil for purposes of national security, and

(4) not to under-rate the benefits of delay in using North Slope oil and the advantages of a pipeline route through Canada if a pipeline must be built at all.

In summary, then, we believe that the environmental impact statement itself demonstrates that the permit for the pipeline should not be granted.

Sincerely yours,

MICHAEL MCCLOSKEY,
*Executive Director.*

## A NEW GI BILL

Mr. MATHIAS. Mr. President, the war in Vietnam continues to wrack the country in many ways. Yet the men who have fought in that war, to whom we owe so much, receive so small a part of our interest and our concern.

The very least we could do for them is to put them into competitive position with their peers through education. This we persist in refusing to do. If there are war crimes in this war, this is one of them, committed on our own troops.

While we admittedly continue to finance operations in Vietnam that waste millions through inefficiency, corruption, and pillage, we dismiss these losses as the hazards of war. Yet we employ the feeble excuse that there were some abuses of the World War II GI bill as the reason we deny equity to today's veterans.

Although the Congress has been callous to the needs of Vietnam veterans, the veterans are no longer sleeping on their rights. An article published in Time magazine this week describes their awakening. I ask unanimous consent that the article be printed in the RECORD.

There being no objection, the article was ordered to be printed in the RECORD, as follows:

TIME FOR A NEW GI BILL?

When Johnny came marching home from the second World War, he could march straight into college—or finish high school—with considerable financial help. A grateful nation had passed the G.I. Bill of Rights, which paid for tuition and books (up to $500 a year for four years) and kicked in $50 and up per month for living expenses. Today's Viet Nam veteran gets just $1,575 a year to cover everything—and only for 36 months. That figure represents an increase of 6.7% over what was paid in the 1940s, but it hardly matches the 350% increase in education costs since then.

In an effort to ease their financial strain, some 350 veterans converged on Duluth last week to plan a campaign of political action. Why Duluth? "Because," said one vet, "the hotels offered to put us up for four dollars a head a night, that's why. We're all broke." Arriving by bus, motorcycle and thumb, delegates of the National Association of Collegiate Veterans (N.A.C.V.), which claims 500 chapters representing 250,000 veterans, began efforts to revise and update the obsolete G.I. Bill.

"Many veterans are forced to work now in order to stay in school," says N.A.C.V. Board Member Patrick M. McLaughlin, 25, once a staff sergeant in the 1st Infantry and now a prelaw student at Ohio University. Work cuts down on study time to such an extent, claims McLaughlin, that the 36 months of aid are almost sure to be exhausted before the student has earned enough credits for graduation.

To change an outdated system, N.A.C.V. is organizing vets both on and off campus in hopes of electing local and state officials sympathetic to their needs. N.A.C.V.'s major objectives: a 20% increase in the subsistence allowance; payments of up to $1,000 per year for books, fees and tuition; extension of studies from 36 to 48 months; two months' advance payment to enable veterans to meet registration costs.

"It would be another question if we were asking for more than the Government offered other vets in other wars," says Bill Cunningham, 28-year-old vice president of N.A.C.V., "but that's not the case. Listen, there were a million guys discharged in 1971. This year there'll be more. You've got to do something for these guys; they know full well what their fathers got when they came home."

## MODERATE AND RESTRAINED STATEMENT BY SOVIET UNION

Mr. FULBRIGHT. Mr. President, the Soviet statement is obviously moderate and restrained. It does not allude to considerations of prestige or threaten military action. Instead it concentrates on the question of the legality of the measures the President has taken—measures taken, it should be emphasized, singlehandedly without any consultation with or authority from Congress—and on warning that the United States must bear the entire responsibility for the consequences of these actions.

I hope, as indeed all thinking Americans must hope, that the Soviets will continue to show restraint. I hope, as all thinking Americans must hope, that this Government will come to its senses before events create situations in which such restraint on the part of others is no longer possible.

In his speech of May 9, the President said that if there were an American defeat in Vietnam "world peace would be in grave jeopardy." The Soviet statement says that the President's recent actions "are fraught with serious consequences for international peace and security." Years ago, an American officer surveying the wreckage of what was once the town of Ben Tre commented that we had to destroy the town in order to save it. We now seem to be threatening world peace in order to preserve it. That kind of mistaken logic led us into the Vietnam war originally, has continued to keep us there and has now led us, a Nation founded on the rule of law and "a decent respect to the opinions of mankind," to take actions which violate the law and offend mankind. Will it now be up to other nations to save us from ourselves?

## UNITED NATIONS CONFERENCE ON HUMAN ENVIRONMENT

Mr. CASE. Mr. President, next month, at Stockholm, Sweden, the United Nations Conference on the Human Environment will be held.

One of the most important objectives of the conference will be to establish a continuing organization to deal with the problems of international protection of the environment.

Recently, the Foreign Relations Subcommittee on Oceans and the Environment held some very useful hearings on the preparations for the Stockholm Conference. These hearings were chaired by my distinguished colleague, the Senator from Rhode Island (Mr. PELL).

One of the statements presented to the subcommittee was that of Richard N. Gardner, professor of law and international organization at Columbia University. I believe his statement is worthy of the attention of all Senators. Therefore, I ask unanimous consent that it be printed in the RECORD.

There being no objection, the statement was ordered to be printed in the RECORD, as follows:

STATEMENT OF RICHARD N. GARDNER TO THE SUBCOMMITTEE ON OCEANS AND INTERNATIONAL ENVIRONMENT OF THE SENATE FOREIGN RELATIONS COMMITTEE, MAY 4, 1972

AN INTERNATIONAL ENVIRONMENTAL COALITION

I am grateful for this opportunity to present my views to this Committee on the organizational questions that will face us at the Stockholm Conference. My views on these questions are set forth in detail in the attached statement entitled "The Role of the UN in Environmental Problems." In these brief introductory remarks, I would like to emphasize three points that I believe have not yet received sufficient attention in either official or public discussion of international environmental organization.

First: The desire of the United States for effective international arrangements for environmental regulation is unlikely to be realized without major changes in present U.S. policy toward the United Nations and multilateral development assistance.

I believe, and have argued for more than a decade, that the national security of the United States is gravely threatened by the expensive and dangerous arms race, the uncontrolled growth of world population, the progressive deterioration of the human environment and the spreading frustration of people in the developing countries at their inability to achieve a decent life. The study

by the Club of Rome published this spring suggests the very real likelihood of massive breakdowns in world society within the lives of our children or grandchildren if present trends continue. Although the most devastating consequences of these trends may lie some decades in the future, the measures necessary to avert disaster must be taken now.

If this diagnosis is correct, the United States ought to be doing everything within its power to strengthen the United Nations and other international institutions to deal with these global problems. Unhappily, however, the Vietnam tragedy is impelling us not only to reduce our unilateral responsibilities, which is good, but to disengage from our multilateral responsibilities, which is bad. United States support for multilateral institutions is in doubt or disarray all along the line. We take no serious initiatives to enlarge the U.N. role in peacekeeping or development. We take a penny-wise and pound-foolish attitude to the United Nations budget. We adopt a low financial profile as the United Nations drifts toward bankruptcy. We violate solemn treaty obligations by refusing to pay our assessments to the ILO and by breaching the Security Council's embargo on trade with Rhodesia. We move steadily away from the internationally agreed aid target of one percent of GNP as other industrialized nations move toward it. We fail to put up our promised share of funds for the multilateral aid agencies—the International Development Association, the Inter-American Development Bank and the Asian Development Bank.

We complain that the U.N. behaves "irresponsibly." How can we expect the institution to behave responsibly if we do not behave responsibly toward it? At a time of planetary emergency, we are rapidly becoming a global dropout. Our leadership is currently fascinated by the politics of the balance of power. Surely the time has come to devote more attention to the politics of world order.

What does all this have to do with the Stockholm Conference? Everything. A healthy set of environmental institutions is unlikely to flourish in a weak United Nations. Moreover, an effective multilateral attack on the problems of environment and population growth is not likely to be mounted in the absence of an effective multilateral attack on poverty. Without an increase in the quantity and quality of global air efforts, the financial and political basis for population control and environmental protection in the less developed countries will not exist. Not only does action on the population and environmental problems cost money that the developing countries do not have, but political resistance to population and environment efforts is likely to grow in these countries if international assistance is static or declining. Already, at the U.N., some countries are charging that the new emphasis by the United States on the environment and population is a gigantic "cop out" to justify our declining foreign aid effort.

Second: The most important single objective of the Stockholm Conference is to establish a flexible institutional framework capable of future growth in response to the needs and demands of the world community.

I do not wish to minimize the importance of the other matters that will be before the Stockholm Conference, such as the Declaration on the Human Environment, the Action Plan, the Convention on Ocean Dumping and the World Heritage Foundation. But the overriding necessity of the Stockholm Conference is to establish an institutional framework to carry on the work which we have only begun. If this is missing, no other achievements can prevent Stockholm from being deemed a failure.

In the attached paper, I describe in some detail my own views about the institutional arrangements that are required—an Environment Secretariat of the highest quality with adequate power initiative; an inter-governmental body to which governments will send senior environmental decision-makers; effective arrangements to draw upon the expertise of the private scientific community; a substantial environment fund to assure the financing of priority projects; new measures for the prevention and settlement of environment disputes; and the development of more effective arrangements to deal with the marine environment.

The basic point that I wish to stress in these preliminary remarks is that our principal attention in the development of these institutions should be on substance rather than form. To take an example, the question of whether the inter-governmental body is an organ of the General Assembly or of ECOSOC is less important than the question of whether governments are prepared to send as representatives to it their environmental ministers or senior environmental decision-makers.

A related point is that we should not be too disappointed if the institutional arrangements do not spell out all the formal powers which some of us in the United States might like to include. Experience with international institutions inside and outside the United Nations suggests that a general and somewhat vague grant of authority can provide the basis for impressive organic growth over the years in response to the needs and aspirations of the member states. The important thing is to get something going that has the capacity for growth.

Third: The United States should support the establishment within the United Nations of an "international environmental coalition" of those countries that are prepared to undertake special responsibilities for environmental action.

I strongly believe that our major efforts for environmental action should be taken through the United Nations and its family of agencies. No other institutions presently exist in which we can pursue environmental diplomacy with developing countries and Communist nations as well as with the members of the North Atlantic community and Japan. While regional cooperation is also necessary, global action through the U.N. system is indispensable if we are to secure the cooperation of the developing world and take vital decisions to protect the world's oceans and atmosphere.

At the same time, we have to face the fact that action within the U.N. does present special difficulties. There are now more than 130 members of the United Nations and these members have widely varying attitudes as to the seriousness of environmental problems and as to the extent to which they should limit their national freedom of action to deal with them. We need some formula to reconcile the need for global cooperation within the United Nations with the equally compelling need for cooperation that is adequate to the challenge.

I believe that such a formula can be found in an "international environmental coalition" operating within the United Nations. The concept is simple. At the Stockholm Conference and in subsequent meetings, an attempt should be made to reach the highest level of agreement among all U.N. members on institutional and other issues. In the foreseeable future, however, this level of agreement will undoubtedly be disappointing to those of us who feel a sense of urgency about the environmental threat. Therefore, the United States should join in organizing a coalition of environmentally concerned nations who would accept voluntarily a higher level of obligation than the membership as a whole.

One obvious example of this higher level of obligation would be willingness to contribute generously to an environment fund. Less obvious, but no less important, would be the voluntary acceptance by the members of the coalition of certain procedures for periodic reporting and submission of environmental disputes to third party settlement.

To be somewhat more specific, the United States and other members of such a coalition should agree to report to the new Environment Secretariat on all national activities (private as well as public) that might affect the environment of others and to consult in good faith with other members and with international agencies when questions or objections are raised. The members of the coalition should also agree that environmental disputes to which they are a party can be taken to the new intergovernmental body at the request of any other party and that they will cooperate with any specially-constituted scientific fact-finding panel which might wish to make on the spot investigations on their territories. The members of the coalition should also agree to make use of the good offices of the Environment Secretariat and to permit non-governmental groups like IUCN and ICSU to present independent testimony on matters at issue in environmental disputes. In addition, wherever possible, international agreements on such specific matters as oil pollution of the sea or ocean dumping should provide for the settlement of disputes at the request of any party by an arbitral commission or the International Court of Justice, which could organize itself into special chambers for this purpose and make use of scientific "assessors."

I doubt that the members of the "international environmental coalition" would be ready to accept an "environmental veto" by international agencies, much less an environmental "police force." But an international review process of the kind outlined above, even if it did not lead to legally binding decisions by international agencies, would represent a great step forward. I believe it would serve the enlightened self-interest of our country to promote such a process among as many countries as possible and to discharge to the full the obligations involved.

Whatever institutions are created at Stockholm, their vitality will obviously depend on the behavior of governments. The hard question is whether those leaders who now use the rhetoric of "spaceship earth" are really prepared to accept the political and economic costs that this rhetoric implies. The answer will be found in the resources that they are prepared to devote to international environmental efforts and the limitations they are prepared to accept on their traditional freedom of national action.

The institutional decisions which governments take at Stockholm and after will have the most profound consequences not only on the quality of environmental cooperation but also more broadly on the whole system of international relations. Failure to devise a workable pattern of cooperation to cope with urgent environmental issues could lead to international disputes and a poisoning of political relations. On the other hand, success in environmental cooperation could help humanity deal with other pressing problems.

A record of successful achievement in this area would demonstrate the U.N.'s capacity to adjust its institutional habits and deal efficiently with major threats to the survival of mankind. It could show the way to new approaches in the economic and political areas. Perhaps, in the long run, it could stimulate new perceptions of interdependence and strengthen the political commitment of governments to a stronger United Nations.

## ADDRESS BY SENATOR BEALL

Mr. BEALL. Mr. President, on April 21, I had the pleasure of addressing the annual spring meeting of the Maryland Association of Junior Colleges.

I ask unanimous consent that address be printed in the RECORD.

There being no objection, the address was ordered to be printed in the RECORD, as follows:

THE COMMUNITY COLLEGE AND THE EDUCATION AMENDMENT OF 1971—PARTNERS IN PURSUIT OF A GREAT NATIONAL GOAL

I appreciate this opportunity to be with my many community college friends tonight.

The range and nature of education in a given nation or society results from many factors including its history, its basic philosophy and its commitment. Fortunately for us, from our Founding Fathers to the present, this nation has had a commitment to education.

It was Thomas Jefferson who first began to make the case for universal education. Mr. Jefferson felt education would provide a "community of honest, useful, and enlightened citizens, understanding their own rights, and firm in their perpetuation." The pronouncements of other Founding Fathers, such as Franklin, Washington, and John Adams, also evidenced a commitment to and a realization of the importance of education.

This outlook was written into law in the Clarion Call For Education written in the Northwest Ordnance which says: "Religion, morality, and knowledge being essential to good government and the happiness of mankind, schools and education, shall forever be encouraged."

But even Thomas Jefferson's view of "universal education" did not include "universal higher education." In his notes on Virginia written in 1782, he writes only of the selection of the "youth of genius" or what he refers to as the "aristocracy of intelligence." Jefferson's vision then clearly did not include the community college concept.

Most, if not all of his contemporaries, would have had similar difficulties with this concept. This limited vision, although most enlightened at that time, continued through the 18th and 19th centuries. It was not until the early 20th century that this nation's sights were lifted and then no higher than an elementary education for all children.

Finally by the middle of this century we had embraced secondary education for all children.

The history of our nation shows successive steps and advances toward education for all that far exceed that of any nation in the history of mankind. We are and should be, proud of that record. For it is a record that reveals ever increasing numbers and percentages of our youth in schools and colleges.

For example, by 1900, 11% of the eligible youths were in high school; today, the percentage approaches 95%.

In 1900, only 4% of our college age youth attended college. Today, the figure exceeds 50%. With educators like you in the audience at work, I am convinced that this growth will continue in the future.

In fact, one author suggests that if the trend continues, we may anticipate a 90% enrollment of college-age youth in our institutions of higher learning during the first decade of the next century.

As you know, community colleges are aware of and are experiencing the implications of such developments and projections.

It has spelled a notable characteristic of junior colleges today, and for the foreseeable future. I am referring, of course, to the explosive growth of community colleges both nationally and here in Maryland. You will recall that in 1900 I said only 4% of our college age youth were in colleges. It is interesting to observe that at the same time there were only 8 junior colleges in the United States with a grand enrollment of 100 students. By 1971, 1,100 private and public junior colleges enrolling 2.5 million students were part of our national and education landscape. In the last decade alone, the number of junior colleges doubled while a 300% increase in enrollment took place. In recent years community colleges nationally have been growing by one a week.

The Carnegie Commission on Higher Education has advanced a national goal of establishing community colleges within commuting distance of all persons by 1980, with the exception of some sparsely settled areas. To reach this goal, the Commission estimated that between 230 and 280 new colleges would be required.

Maryland's experience has been similar to that of the nation as a whole. The number of community colleges in our State in the past six years have increased by over 45% and the enrollment at the institutions has tripled. Fortunately, we in Maryland are far ahead of most of the nation toward meeting the goal of making geographical access to community colleges for all Marylanders.

47,671 credit seeking students were enrolled in Maryland's 16 community colleges in 1971. This represented a 13.2% increase over the previous year. The State's projections indicate that by 1976 the enrollment in the community colleges will be over 82,000 and by 1981, the projected size will surpass 100,000, a figure which will represent 60% of the projected first two year under-class enrollment in higher education in Maryland.

Current surveys in Maryland indicate that 93.3% of Maryland's residents live in counties served by community colleges. Thus, the Carnegie Commission's goals for tomorrow is becoming a reality in Maryland today. Only 6.7% of the State's population live in counties not presently served by community colleges. However, it has been estimated that 3,434 Maryland citizens would enroll in a community college if it were accessible. Members of this audience, I am sure, are aware of the fact that it has been found that more than half of all high school graduates intend to go to college if there is a public junior college in the community, whereas one-third or less do so if there is not such an institution near by.

The community college movement is a logical extension of educational opportunities in this country. They are unique institutions built in response to community and citizen needs. They are locally controlled and operated. They are a part of and vital to the community and the community is a part of and vital to the college.

The community college has not been without its critics. Recently, I read an article criticizing the community colleges as offering unequal educational opportunity. By this I guess it is meant that the Harvard education is not offered at community colleges.

But, the community colleges are not and should not be watered-down versions of four year colleges. Community colleges should seek excellence. This is just as important in one type of institution as it is in another. As John Gardner, former Secretary of the Department of Health, Education, and Welfare pointed out "As things now stand the word excellence is all too often reserved for the dozen institutions which stand at the very zenith of higher education, in terms of faculty distinction, selectivity of students, and the difficulty of curriculum. In these terms, it is simply impossible to speak of junior colleges, for example, as excellent. Yet, sensible men can easily conceive of excellence in a junior college.

"The traditionist might say 'of course'; let Princeton create a junior college and one would have an institution of unquestionable excellence". That may be correct, but it leads us down precisely the wrong path. If Princeton Junior College were excellent in the sense that Princeton University is excellent, it might not be excellent in the most important way that a community college can be excellent. It would simply be a truncated version of Princeton. A comparably meaningless result would be achieved if General Motors tried to add to its line of low priced cars by marketing the front end of a cadillac. We shall have to be more flexible than that in our concept of excellence. We must develop a point of view that permits each kind of institution to achieve excellence in terms of its own objectives. The community college then should continue to pursue excellence but it should be excellence in its own objectives".

The community college has and must continue its unequaled and critical role in the provision of universal access. Briefly, I would like to discuss with you some of the community college's roles and in some cases comment on them.

Community colleges will continue to have the major responsibility for preparing students at upper division work at universities and colleges. Course offerings should be coordinated with the University so that they will be fully transferable with as little loss of credit as possible to the student. I applaud our State's efforts to improve the articulation process. I recently examined a catalog for Montgomery Junior College and I must say I was very impressed with the course offerings. I was particularly pleased with the examples of coordination and imagination that I believe are essential for higher education in the country.

If I read the catalog correctly, a student desiring to enter business administration, could spend two years at Montgomery Junior College. Thereafter, the student could transfer to the University of Maryland at College Park and spend another year there as part of his business administration program. The student then could enter the Maryland University Law School at Baltimore and would be given his Bachelor of Science degree in Business Administration after he completed his initial year of law school, which would represent his fourth year of business school. The student then, of course, would continue until he received his law degree.

Thus, three separate campuses have been combined to make it possible for students to secure his business and law degrees in one year less time. This is the kind of cooperation and imagination needed in education in the country. I urge all in the audience today to continue to pursue similar arrangements.

The community colleges have a major responsibility in technical and vocational education. This is an area that has been neglected in much of the Nation. Somehow, American education and educators from the elementary to the college level must quit peddling or implying the nonsense that an academic college education is the only passport to success. This is patent nonsense. I believe that Maryland is facing up to this issue. It is my understanding that vocational students now make up 30% of Maryland community college students, and within 5 years this percentage is expected to reach 50%.

However, there is some cause for alarm. The just completed "Project Focus" a study done by the American Association of Junior Colleges, indicated "career education within the community college setting is experiencing difficulty . . . and that much of the liberal arts faculty sees "little value in providing training option to students". This attitude does not make sense. The trend in Maryland, as well as my personal discussion with the community college Presidents and faculty, makes me believe this attitude is not prevalent in our State. Again John Gardner gave an analogy which I believe states the case quite well.

He said:

"There may be excellent plumbers and incompetent plumbers, excellent philosophers and incompetent philosophers. An excellent plumber is infinitely more admirable than an incompetent philosopher. The society which scorns excellence in plumbing because plumbing is a humble activity and tolerates shoddiness in philosophy because it is an exalted activity, will have neither good plumbing nor good philosophy. Neither its pipes nor its theories will hold water."

Community colleges should continue to be open-door institutions. This concept is consistent with the idea of educating our citizens to the fullest potential, gives late bloomers a second chance, and allows the retraining of adults for jobs created in an age of automation.

Junior colleges must continue to be a community college in all that name implies. The community junior college must attempt to meet the special requirements and concerns of the community and this is one of the real important developments in the junior college movement. College classes during evening hours, cooperative programs with industry, special programs for low-income groups, and special non-credit courses appealing to avocation or cultural interests are a few of the examples of good community involvement. I am pleased to note again that Maryland is one of the few states providing state support for community service programs of a non-credit nature.

Modern communications and technology are going to bring revolutionary changes in communities and colleges in the future.

Some have predicted the demise of education as we know it today. While this seems far out, the possibility of communications are indeed staggering. Take Cable TV and its implications. It will now be possible to beam community college courses into homes throughout the community.

As far as the political process is concerned, cable TV may usher in the citizens participation unlike anything that the nation has experienced since the New England Town Meetings. Cable television will permit a great opportunity for imaginative local TV programs and I believe that the community colleges in many areas will be looked to for a major role in this regard. Also, I would like to see funds available for community colleges to enable them to focus on community problems such as unemployment, transportation, health, drug abuse, pollution, and housing, to mention a few. The American Association of Junior Colleges' *Project Focus*, to which I previously referred, recommended such an effort and in fact envisioned the establishment by 1980 in community colleges a variety of quasi-permanent institutions focusing on community problems.

President Nixon in submitting his Educational Message, and proposals to the Congress, made an historical pledge when he said, "No qualified student who wants to go to college should be barred for lack of money. That has long been a great American goal: I propose that we achieve it now".

Since then, the Congress has been working on legislation that will become, in my judgment, another legislative milestone. When the Higher Education Bill passed the Senate, I said in a floor speech, "This measure is both massive and monumental. It is not only for the moment but for the future." As you know, this legislation is now in the Conference Committee which has the difficult job of reconciling the differences between the bills as passed by the House and the Senate. The Higher Education bill, in reaching this stage of its legislative journey, had added to it a 1.5 billion dollar two-year aid to school districts to help them desegregate. School anti-busing amendments were also added to both House and Senate bills and this issue will probably be the last item resolved by the Conference Committee. To give you an idea of the complexities and the size of the task facing the Conference Committee, on which I serve, the Senate bill was over 750 pages in length and there are over 250 substantive issues that will have to be resolved by the Conference Committee before final House and Senate passage.

I will discuss with you some of the major issues in the Higher Education legislation and, where possible, the decisions reached by the Conference Committee thus far.

Student aid is one of the major issues facing the Conference. Both the Senate and House bills would continue the present National Defense Student Loans and the Educational Opportunity Grants. But the Senate bill, in keeping with the President's commitment that no student should be barred from attending college for lack of financial resources, envisions a vast increase in the direct Federal grant assistance, and would authorize a new program called "basic opportunity grants".

Under this program a student would be eligible for a grant of up to $1,400 less the amount the student's family could reasonably be expected to contribute to the education of the student. Family contribution would consider such items as family income, the number of dependents, including the number of dependents in college, family and student assets, and any unusual expenses, such as medical bills. Such a basic grant could not exceed 50% of the cost, such as tuition, fees, rooms and board and books and other expenses deemed by the Commissioner to be related to attending the Institute.

The House bill extends the present student aid program generally with some improvements. The Conference Committee tentatively agreed on the Senate position with respect to student aid. Testimony was presented to the Congress indicating that young men and women from families in the bottom quarter of the nation economically, are three times less likely to be in college than those in the top quarter. The Senate student aid provisions are designed to provide economically equal access to higher education. Coupled with the geographical access that community colleges are providing, these new student assistance grants will greatly expand educational opportunities in the nation.

The second key issue before the Conference is institutional aid. Both the House and the Senate bills provide for the first time direct federal grant to the nation's colleges and universities to use as they see fit.

The House and Senate versions vary considerably. The Senate formula would distribute institutional aid according to the number of students receiving the basic Federal grants and the number of veterans. On the other hand, the House formula allocates one-third of its institutional aid according to the amount of educational opportunity aid received by students at the various institutions and two-thirds according to total enrollment. Both the House and Senate formula are weighted so that smaller colleges get more per student than the largest universities.

Under the Senate provision, community colleges in the country and Maryland would receive two times as much funds as under the House version. For example, for each $100 million appropriated, the Senate bill would provide $32.6 million to community colleges where as the House would provide $16.5 million. Maryland Community Colleges would receive $323,612 under the House formula, and $67,560 under the Senate version.

To date, no decision on institutional aid has been reached by the Conference Committee. I believe the final version will be an amalgam of the two, although it likely will be closer to the Senate position. There has been some concern voiced with respect to the constitutionality of both bills' institutional aid provisions since assistance is provided to church related schools.

The Senate believes its version, because it addresses a specific national purpose, namely, promoting equal educational opportunities, is more likely to stand a constitutional test.

There are also important items in the conference dealing with expanded educational research. It is important that an accelerated effort be made in this area. If one compared research and development expenditures in education, as compared to health, defense, and other areas, one is sharply struck with the disproportionment resources that are being spent in the educational research area.

The Senate bill would establish a National Institute of Education to do educational research and development, authorizing $25 million for the initial year, and also would authorize a national foundation for postsecondary education. The foundation will provide funds to institutions and individuals for promising experiments in higher education.

Similar to the National Science Foundation, the Foundation would be authorized to spend $200 million the first year.

Another section in the Senate bill of particular interest to the Community Colleges is found in title 10. I am referring to that section of the Senate bill which authorizes $225 million over a three year period for establishing and expanding community colleges to bring them within commuting distance of all students. Part A of this title authorizes grants to the States for the survey of postsecondary education programs and the development of statewide plans for the expansion and improvement of postsecondary education programs in community colleges. Although our State is far ahead in the planning area, this is needed by many States and I am certain that Maryland will make good use of the funds. Part B of the title provides for three types of grants to establish new community colleges, to expand existing colleges, and grants to lease facilities either for the purpose of establishing a new college or expanding existing ones.

In addition, the Senate bill raises the present setaside for junior colleges under the higher education facilities section from 23% to 24%.

Title 10 also authorizes a community college unit in the Office of Education to coordinate all programs administered by the commissioner. Our educational subcommittee has been concerned with the disproportionately small allocation of funds to community colleges by the Office of Education. During the fiscal year 1971, for example, we found that community colleges received less than 6% of the $4.4 billion budget administered by the Office of Education. The House bill does not have a community college section but it does have an occupational educational title. The conferees have not resolved the community college and occupational education titles. This was the item discussed in our last conference and effort is underway to combine these provisions. I feel confident that the conference will adopt the community college and occupational education titles. I strongly support such agreement which will help provide the needed additional resources for community colleges not only because of the need that exists but also in recognition of your solid record of accomplishment in expanding educational opportunity to young men and women in this country.

There are many other important provisions in the bill dealing with such items as women's rights, developing institutions, library assistants, community service, teacher training, and so on. As I previously indicated, there are over 250 substantive issues. We have approximately 125 issues remaining. We have been meeting since before Easter and have made considerable progress and are scheduled to resume our meetings next week. I cannot predict when the conferees might conclude, but there is hope expressed that agreement will be reached in the next two to three weeks.

I am aware of the urgency to reach agreement on this legislation so that students will know what financial assistance might be available for the fall term, and that schools might know what, if any, institutional assistance they might count on.

Mr. Adolpf A. Berle, addressing a conference of school administrators discussed the charge that our society is hyprocritical. He said:

"Accusation is made that American society is hypocritical—It proclaims a spate of ideals in the Declaration of Independence and the Constitution and does not live up to its profession. A good teacher, far from denying this, would at once admit its truth. But he would add something surprising. He would say that no society would be worth the price of admission if it did not proclaim ideals which were beyond its present realization. For that matter, no man ever lived up to his ideals either. If ever American society fulfills all its ideals, it would be because the ideals were outrageously low."

Setting goals beyond our reach has always been tradition of this country and of the education community. Commissioner Marland in his recent annual review of the conditions of education in the Nation referred to this process as the endless educational renaissance. He predicted that at the close of this decade America will find that its expectations in education are being met and that education had responded effectively to this public will. But he went on to say that society would be further dissatisfied with whatever gains were made and a "splendid discontent will launch us possibly into the near decade of the endless education renaissance". Our Nation was formed *based* on a belief that a better way of life could be found. But the spirit of America has always been regenerated by the fact that we have a program for tomorrow. The progress that you are developing in the community colleges in Maryland and the legislation that is being shaped in Congress will enable the Nation to reach *today's* national goals, but in the meantime, I am certain that national goals and sights will be raised even higher *tomorrow*. This after all is the story of America. May it always be so.

## MISSOURI'S VOLUNTEERS AGAINST HUNGER

Mr. EAGLETON. Mr. President, Volunteers Against Hunger, a project of the Missouri Association for Social Welfare, was organized in 1970 as a citizen organization to combat hunger and malnutrition in Missouri.

Although there are similar volunteer groups in other States, Missouri's Volunteers Against Hunger is the only statewide organization with county committees extending to the township and community level.

The organization's efforts have been directed primarily toward increasing participation in, and improving the effectiveness of, the food distribution program which is still the major family food assistance program in Missouri.

In recent months, when a funding crisis arose, $80,762 in contributions was raised to enable the program to be continued in the 28 counties where its existence was threatened.

Government programs and funding are certainly the most important ingredients in the effort to alleviate hunger and malnutrition. But often citizen involvement, such as that so successfully organized by the Missouri Association for Social Welfare, can bring programs and people together in a more meaningful and effective way.

The April issue of USDA's Food and Nutrition magazine contains an article on Missouri's Volunteers Against Hunger by Charles T. Weirauch, of USDA's Midwest regional office.

Mr. President, I ask unanimous consent that the article be printed in the RECORD.

There being no objection, the article was ordered to be printed in the RECORD, as follows:

MISSOURI'S VOLUNTEERS AGAINST HUNGER

(By Charles T. Weirauch)

After making a nutrition survey that revealed the extent to which hunger and malnutrition exist in Missouri, Mrs. Betty Hearnes, wife of the Governor, and the Missouri Association for Social Welfare's steering committee decided to establish a volunteer food aid coordinating committee.

Funding for the statewide project was arranged in April 1970 through the State of Missouri Division of Welfare and a U.S. Department of Health, Education and Welfare research and demonstration grant.

The action committee, Volunteers Against Hunger, has since been established in 80 counties where USDA's food distribution program is in operation.

"In these counties we work to educate citizens about the food aid programs and to obtain their support of it," says Tom Snodgrass, VAH project coordinator.

The VAH movement is built on the concept that hunger and malnutrition can be eliminated in all counties across the Nation if enough dedicated citizens pool their efforts," says Mrs. Daniel Schlafly, chairman of the State volunteer committee.

The primary goal of VAH is uniting such people against hunger in Missouri. However, its organizers can see no reason why their concept cannot be adapted in all other States.

"We believe that many persons want to help a government program that aids their community," Snodgrass says. "Once VAH convinces the public that effective help programs do exist, individuals, groups and businesses will often jump at the chance to work with them."

When they do respond, the VAH county committee is close at hand to direct their volunteer activities.

In setting up committees in new counties, VAH personnel use a uniform four-page organization plan.

"This plan has been adapted without change by the counties because of its simplicity," Snodgrass says.

The first step calls for the Missouri Association for Social Welfare workers to recruit a county chairman from the community in which he is to work. He in turn must familiarize himself with local operations of the food distribution center and county welfare agency.

"We urge such a first step because the Volunteers' chairman is a primary educational source," Snodgrass points out. "The more the chairman knows about the program operations and related social problems, the more he will be able to convince others to join in the effort."

Other steps involve talking to University of Missouri Extension nutritionists, county coordinators of community action programs, and others working with disadvantaged persons. It is hoped that these groups will serve as advisors for VAH and point out sources of volunteers. Meeting with them also might point out weak areas in the food distribution plan where such volunteers could concentrate their efforts. They might also know of good contacts among food program participants. VAH members have found it important to have persons from all sides pass along their feelings and information.

"While working with these people, it is important for the county chairman to make clear that VAH will not be duplicating their functions," Snodgrass emphasizes. "We're organized to explain the food distribution program's existence in the community and educate people in its use. Other agencies utilize it, but do not concentrate their program efforts there as we do."

"Volunteers from the local community relate to people in need at their own level," says Mrs. Schlafly. Volunteers can supplement the extensive activities of University of Missouri nutritionists by getting recipes and other nutrition information out to those who need it.

Other volunteers may be needed for more physical efforts, such as taking USDA food by proxy slip to those who cannot come in for it, taking others down to the center for recertification, and by helping out in the food distribution center.

Mrs. Schlafly emphasizes that it is the job of Volunteers Against Hunger to help build bridges of communication. "We must be realistic and admit that we have not found the final solution to the problem. However, we must work to use the system we have to its fullest advantage. VAH should be there to enhance whatever programs work best."

Just before the Civil War, residents of Callaway County, Missouri, established the Kingdom of Callaway and declared it to be a neutral soverign State throughout the war.

Today, however, Callaway residents have joined the war against hunger and malnutrition. The Missouri Volunteers Against Hunger and USDA's food distribution program have worked together in the county to make significant gains in getting food to disadvantaged persons.

The relationship began less than a year ago, but in that time 16 diverse community groups have pitched in to help expand the food aid program.

Such response is attributed to good coordination of volunteer efforts by Mrs. Celsta Cannell, chairman of the Callaway County chapter of the Statewide Volunteers Against Hunger, and James Baysinger, county food distribution supervisor.

"It's important to utilize a volunteer's time in accordance with his work interests, but we have to make sure we have enough people to carry out all of our activities," says Mrs. Cannell.

Need for volunteers becomes apparent when a person walks into the Fulton food distribution center on one of the ten monthly distribution days. On that day, as many as 150 household recipients might come in for their monthly food allotments.

The first volunteers a recipient meets are college students from Westminster and William Woods Colleges. About 150 students spend some time at the center checking food supplies and making sure that the recipients receive proper amounts. They also see that program participants have a way of getting their food home.

For those persons who cannot come in to pick up their food because of transportation or health problems, volunteers may obtain a proxy slip. This authorizes them to pick up the food and drive it to those in need.

Students from Fulton High have been helping out in such deliveries both on their own and through the Drive to Serve program.

This program utilizes driver education cars to deliver USDA foods to elderly recipients who live out of town and are disabled. The Callaway County Drive to Serve Program is one of six pilot projects established by USDA's Food and Nutrition Service in cooperation with the National Red Cross to test this new approach in delivering foods.

Besides getting food to those who would not normally be able to get it, Drive to Serve lets the students see how the food distribution program can help, and many students have become volunteers.

Mrs. Dorothy Meyer, Red Cross representative for the Callaway County area, has been helping to coordinate these volunteers. Oc-

casionally they borrow the Red Cross station wagon to make food deliveries.

"Students in the Drive to Serve Program and other volunteers often tell people in the community about the merits of the food aid plan," says Mrs. Cannell. "Such grassroots communication is highly effective in educating the community about food distribution."

Education is an essential part of the volunteer operations—for the recipient, other welfare agencies and the community in general. The recipient often gets his first taste of this when picking up food at the center, where nutrition aides from the University of Missouri Cooperative Extension Service pass out recipes and information on how to get the full nutritional value from foods received.

"Volunteers supplement such activity by going out into recipients' homes and disseminating similar information," says Mrs. Cannell. Although Extension aides also go into the community, the volunteers help them to reach all potentially needy households.

Even then, there are not enough volunteers for this kind of work. Efforts have to be concentrated on persons who need help the most.

To find out where these areas are, volunteers have contacted local welfare agencies. From them they have learned where they might be able to make the most impact.

The Callaway volunteer group has also discovered from the welfare agencies that there are organizations which offer aid to community improvement projects. Such groups as the Council of Ecumenical Ministers, League of Women Voters, and other business groups and civic clubs have supported the food distribution program.

Faced with a possible end to food program operations last spring, the Callaway Volunteers Against Hunger launched an emergency fund drive to cover the $320 a month in operating costs.

Some volunteers made appeals to civic groups and businesses for contribution pledges. Others, such as college and high school groups, recruited funds from their peers and the community.

In just two weeks the VAH group reached its goal, getting enough cash and pledges to cover operating costs. This money allows 2,650 county recipients to receive their share of the $40,000 a month in food distributed at the Center.

The Callaway drive is holding its own, but proposed State legislation would allow the number of recipients to increase.

"We're going to make sure", Baysinger says, "that the food distribution program stays and grows in Callaway county."

## FINANCIAL STAEMENT OF SENATOR BEALL

Mr. BEALL. Mr. President, consistent with my view that elected officials should make the public aware of their financial interests, I ask unanimous consent to have printed in the RECORD, my financial statement and a list of stocks held as of December 31, 1971.

There being no objection, the statement was ordered to be printed in the RECORD, as follows:

*Financial Statement of Senator J. Glenn Beall Jr., as of Dec. 31, 1971*

ASSETS

| | |
|---|---|
| Cash in bank: Checking accounts | $8,505.28 |
| | 11,137.30 |
| Total | 19,642.58 |
| Stocks and bonds (see list attached, appendix A) | 120,346.68 |
| Life insurance—cash surrender value | $15,543.00 |
| Beall, Garner & Geare Retirement Trust (vested interest) | 25,553.63 |
| Equity in Beall, Garner & Geare Realty Co. (copartnership) | 9,977.60 |
| Dwellings: | |
| Beall's Lane, Frostburg, Maryland | 50,000.00 |
| Western Avenue, Chevy Chase, Md | 80,000.00 |
| Total | 130,000.00 |
| Personal Property (furniture, etc. at both locations | 20,000.00 |
| 1969 Oldsmobile 4 door sedan | 1,300.00 |
| Total | 342,363.49 |

LIABILITIES

| | |
|---|---|
| Note payable, First National Bank & Trust Co. of Western Maryland | 10,000.00 |
| Mortgage payable, Fidelity Bank, Frostburg, dwelling | 18,785.60 |
| Citizens Building and Loan Association, Chevy Chase, dwelling | 55,643.66 |
| Total | 84,439.26 |
| Net worth | 257,924.23 |

APPENDIX A.—STOCKS AND BONDS

| | |
|---|---|
| 39 Beall, Garner and Geare, Inc. (common) | $71,574.25 |
| 260 Beall, Garner and Geare, Inc. (preferred) | 26,000.00 |
| 100 Canadian Export Gas and Oil | 218.75 |
| 5 Charter New York Corporation | 170.00 |
| 5 Cumberland Fair Association | 375.00 |
| 50 Fidelity Bank of Frostburg, Maryland | 1,000.00 |
| 79 First National Bank and Trust Company of Western Maryland | 4,740.00 |
| 17 Kaiser Aluminum and Chemical (common) | 1,045.50 |
| 8 Kaiser Aluminum and Chemical (4¾% common preferred, 1959) | 472.00 |
| 156.4 Massachusetts Investors Growth Fund | 2,226.18 |
| 30 Minnesota Mining and Manufacturing Company | 4,050.00 |
| 200 United States Fidelity and Guaranty Company | 8,475.00 |
| Total | 120,346.68 |

## LAND RETIREMENT AMENDMENT IN SUPPLEMENTAL APPROPRIATION BILL

Mrs. SMITH. Mr. President, I am most grateful to the Senate conferees for their unanimous support of my $10 million land retirement amendment in the supplemental appropriations bill. I know that the farmers of Aroostook County and the State of Maine are grateful to them for their stand in the interest of Maine farmers.

I am keenly disappointed that the unanimous opposition of the House conferees—not a single one of them voting for the amendment—resulted in killing the amendment and deleting it from the bill. I know that Maine farmers will be keenly disappointed with their action to kill the proposal.

## DEPARTMENT OF DEFENSE INDEPENDENT RESEARCH AND DEVELOPMENT REPORT

Mr. McINTYRE. Mr. President, section 203, paragraph (c) of the 1971 Department of Defense Appropriation Authorization Act—Public Law 91-441—requires the Department of Defense to submit an annual report to the Congress on independent research and development and bid and proposal costs. I ask unanimous consent to have the following documents printed at this point in the RECORD:

(a) The language of section 203, Public Law 91-441.

(b) Copy of the letter of transmittal dated March 11, 1972, and the report for calendar year 1971.

(c) Copies of implementing Department of Defense directives and instructions.

(d) Onsite review schedules for calendar year 1972.

There being no objection, the items were ordered to be printed in the RECORD, as follows:

SEC. 203, PUBLIC LAW 91-441

SEC. 203. (a) Funds authorized for appropriation to the Department of Defense under the provisions of this or any other Act shall not be available after December 31, 1970, for payment of independent research and development or bid and proposal costs unless the work for which payment is made has, in the opinion of the Secretary of Defense, a potential relationship to a military function or operation and unless the following conditions are met—

(1) the Secretary of Defense, prior to or during each fiscal year, negotiates advance agreements establishing a dollar ceiling on such costs with all companies which during their last preceding fiscal year received more than $2,000,000 of independent research and development or bid and proposal payments from the Department of Defense, the advance agreements thus negotiated (A) to cover the first fiscal year of each such contractor beginning on or after the beginning of each fiscal year of the Federal Government, and (B) to be concluded either directly with each such company or with those product divisions of each such company which contract directly with the Department of Defense and themselves received more than $250,000 of such payments during their company's last preceding fiscal year;

(2) the independent research and development portions of the advance agreements thus negotiated are based on company submitted plans on each of which a technical evaluation is performed by the Department of Defense prior to or during the fiscal year covered by such advance agreement; and

(3) no payments for independent research and development or bid and proposal costs are made by the Department of Defense to any company or product division with which an advance agreement is required by subsection (a)(1) of this section, except pursuant to the terms of that agreement.

(b) In the event negotiations are held with any company or product division with which they are required under subsection (a)(1) of this section, but no agreement is reached with any such company or product division, no payments for independent research and development or bid and proposal costs shall be made to any such company or product division during the fiscal year for which agreement was not reached, except in an amount substantially less than the amount which, in the opinion of the Department of Defense, such company or product division would otherwise have been entitled to receive, subject to appeal by such company or product division under regulations to be prescribed by the Secretary of Defense.

(c) The Secretary of Defense shall submit an annual report to the Congress on or before March 15, 1971, and on or before March 15 of each succeeding year, setting forth—

(1) those companies with which negotiations were held pursuant to subsection (a) (1) of this section prior to or during the preceding fiscal year of the Federal Government, together with the results of those negotiations;

(2) the latest available Defense Contract Audit Agency statistics, estimated to the extent necessary, on the independent research and development or bid and proposal payments made to major defense contractors, whether or not covered by subsection (a) (1) of this section during the preceding calendar year; and

(3) the manner of his compliance with the provisions of this section, and any major policy changes proposed to be made by the Department of Defense in the administration of its contractors' independent research and development and bid and proposal programs.

(d) The provisions of this section shall apply only to contracts for which the submission and certification of cost or pricing data are required in accordance with section 2306(f) of title 10, United States Code.

(e) Section 403 of Public Law 91–121 (83 Stat. 204) is hereby repealed.

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MARCH 11, 1972.

Hon. SPIRO T. AGNEW,
*President of the Senate,*
*Washington, D.C.*

DEAR MR. PRESIDENT: The Secretary of Defense has requested that I prepare and submit to you the report of Independent Research and Development and Bid and Proposal costs required under Section 203, Paragraph (c) of the 1971 Department of Defense Appropriation Authorization Act (PL 91–441). This Section requires the submittal of an annual report to the Congress on or before March 15 each year setting forth—

"(1) those companies with which negotiations were held pursuant to subsection (a) (1) of this Section prior to or during the preceding fiscal year of the Federal Government, together with the results of those negotiations.

(2) the latest available Defense Contract Audit Agency statistics, estimated to the extent necessary, on the Independent Research and Development or Bid and Proposal payments made to major defense contractors, whether or not covered by subsection (a) (1) of this Section during the preceding calendar year; and

(3) the manner of his compliance with the provisions of this Section, and any major policy changes proposed to be made by the Department of Defense in the administration of its contractors' Independent Research and Development and Bid and Proposal programs."

The report is in three parts corresponding to the three items quoted above. Parts I and II were compiled from detailed data pertaining to individual companies. This detailed company information is very sensitive and is not included in the report; however, it will be made available for review.

Sincerely,

BARRY J. SHILLITO,
*Assistant Secretary of Defense (Installations and Logistics).*

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REPORT TO THE CONGRESS ON INDEPENDENT RESEARCH AND DEVELOPMENT COSTS AND BID AND PROPOSAL COSTS

PART I

Companies with which negotiations were held pursuant to Section 203 prior to or during the preceding fiscal year of the Federal Government and the results of those negotiations.

Section 203 became effective January 1, 1971. Since the Federal Government's fiscal year ends on June 30, this report for Fiscal Year 1971 covers those negotiations completed in the six-months period from January 1, 1971 through June 30, 1971. The attached Schedule A provides data relative to these negotiations.

At this time we have preliminary information concerning the negotiations that we will be reporting next year. This data indicates that negotiations were conducted with 54 companies between June 30, 1971 and December 31, 1971 to establish ceilings for contractors' 1971 IR&D/B&P costs. In addition negotiations were conducted with 8 companies during this time period to establish ceilings for the contractors' 1972 fiscal year. As indicated before, complete information on these negotiations plus those conducted in the second half of Fiscal Year 1972 will be included in next year's report. We estimate that 75 or more companies will be included in that report because they fall within the $2 million threshold established by Section 203 and are required to negotiate advance agreements.

SCHEDULE A

I.R. & D./B. & P. REPORT, PT. I—NEGOTIATIONS COMPLETED IN FISCAL YEAR 1971 AND RESULTS OF THOSE NEGOTIATIONS

[Dollars in thousands]

| Contractors' fiscal year | Number of companies | Total program dollars proposed by contractors | | | Total advance agreement ceiling dollars negotiated by DOD | | | Estimated DOD share of ceiling dollars negotiated | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | I.R. & D. | B. & P. | Total | I.R. & D. | B. & P. | Total | I.R. & D. | B. & P. | Total |
| 1971 | 20 | $231,853 | $97,844 | $329,697 | $181,445 | $85,579 | $267,024 | $95,525 | $56,191 | $151,716 |
| 1972 | 2 | 9,611 | 9,563 | 19,174 | 8,092 | 7,978 | 16,070 | 6,628 | 6,814 | 13,442 |

PART II

Latest available Defense Contract Audit Agency statistics, estimated to the extent necessary, on the Independent Research and Development (IR&D) or Bid and Proposal (B&P) payments made to major defense contractors, whether or not covered by Subsection (a) (i) of this Section [203, PL 91–441] during the preceding year.

The statistics required are provided in the attached DCAA report. The report shows total IR&D and total B&P costs incurred by the contractors reviewed, the amount accepted or recognized by the Department of Defense and the DOD share. In addition, total sales of the contractors are shown along with the portion representing DOD sales.

The amount listed on Page 1 under the column heading "Amount Accepted by Govt." represents the sum of the ceilings negotiated with individual contractors as well as the sum of amounts recognized for other contractors who had no advance agreements. These accepted amounts are not the costs reimbursed by the DOD but are the amounts that the DOD recognizes for allocation to all the contractors' business. The DOD portion is shown under the column headed "DOD share."

Page 2 of the report shows the portion of the total dollars reported which was covered by advance agreements. It should be noted that, in the past, very few advance agreements were negotiated for B&P. This accounts for the small amount of B&P costs shown on Page 2 for 1970. Page 3 reflects IR&D and B&P costs for which no advance agreements were negotiated.

Although not required by Section 203 a report is also included showing other technical effort (OTE) costs. The cost principles included in the Department of Defense Procurement Regulation have been modified to include, in their definitions of IR&D and B&P, certain technical costs not now included. These revised definitions were not yet effective in Calendar Year 1971 and OTE costs are, therefore, being furnished to provide consistency with data previously furnished.

It will be noted that data for both 1970 and 1971 are furnished. It has been the practice to update data previously furnished because latest year figures include significant amounts of estimated information. The 1970 figures presented here have had most of the estimated data replaced with actual data. The report furnished next year will similarly update the 1971 data furnished herewith.

A complete explanation of the information contained in the report is provided in the foreword which precedes Page 1. You will note that some changes have been made to improve the quality of the data reported. There has also been a change in the criteria for selecting major defense contractors to be included in the report. This change in criteria causes some companies to drop out of the report and brings in certain others. The net effect is a slight reduction in the number of companies and a slight increase in the IR&D/B&P dollars reported. We do not believe the change in selection criteria has any significant effect on the report.

PART III

The manner of his compliance with the provisions of this section, and any major policy changes proposed to be made by the Department of Defense in the administration of its contractors' Independent Research and Development and Bid and Proposal Programs.

*Armed services procurement regulation (ASPR) implementation*

In the report furnished to the Congress last March we advised that we had published Defense Procurement Circular (DPC) 84 in November 1970 to implement Section 203. In April of 1971 we published a revision to that initial implementation which changed the criteria under which contractors were required to negotiate advance agreements for IR&D and B&P. This change was made to conform the criteria more closely to the provisions of Section 203 which requires negotiations only when a contractor recovers over $2 million of IR&D or B&P costs from Department of Defense contracts which are subject to the Truth in Negotiations Act. A copy of this revision, which was published in DPC 87, is attached.

In September of 1971 we published two new Armed Services Procurement Regulation (ASPR) cost principles for IR&D and B&P respectively. These new cost principles were included in DPC 90 which is attached for your information.

The new IR&D and B&P cost principles provide a complete new policy for allowance of these costs and, as they become effective in new contracts, will supersede all prior IR&D and B&P ASPR policy. The cost principles provide for implementation of the Section 203 legislation and also establish a policy for determining the amount of IR&D and B&P costs to be allowed for contractors not subject to the legislative requirements.

*IR & D Policy Council*

An IR&D Policy Council has been established to develop policy and guidance essential to the efficient administration of IR&D and B&P. This Council will concern itself with matters such as the proper level of DOD support, DOD goals with respect to IR&D and B&P, guidance for determining potential relationship of contractors' IR&D and B&P projects to military functions or operations and other IR&D and B&P policy matters. The Charter for the Council is contained in the attached DOD Instruction 5100.66 dated February 29, 1972.

*Technical evaluation procedures*

An Instruction assigning responsibilities and procedures for the technical evaluation and review of contractors' IR & D has been written. This is also included in DOD Instruction 5100.66.

The technical evaluation procedures are under review by the IR & D Technical Evaluation Group. Included in the review is consideration of the comments received on the proposed IR & D Technical Review form which has been used by the evaluators on a trial basis for almost a year. It has been determined that the form requires some changes. After these changes have been made, the form will become an official DOD document. A copy of the test form (without changes) is attached.

*IR & D data bank*

A DOD IR & D Data Bank has been established at the Defense Documentation Center. This data bank will provide a centralized body of technical and management information that will enable DOD scientists, engineers, and managers to identify the IR & D projects as well as the companies conducting them. Approximately 40 major companies are participating in the three-year service test of the data bank. Project data has been placed in the bank by 21 companies, and inputs from the others is expected in the next few months. A copy of the IR & D Data Bank Input Manual (DSAM 4185.9) is attached.

*Resources and administration*

In the more general area of resources and administration of the IR & D program, revisions to the guidelines for the annual preparation of IR & D Technical Plans (brochures) have been prepared and distributed through the DOD negotiators. The guidelines should assist each contractor in preparing a plan to meet the provisions of ASPR 15–205.35. IR & D Technical Plans prepared in accordance with these guidelines should assist the technical evaluators in determining the allowability of the individual projects and the reasonableness of the IR & D program. A copy of the guidelines is attached.

A specific schedule has been prepared for the CY 72 on-site reviews of IR & D programs (copy attached). Currently, on-site reviews in support of technical evaluations are averaging more than one each week. The conduct of these reviews requires the time of many personnel over and above their normal duties.

The workload impact due to the requirement for making a "potential relationship" determination for each IR & D project as well as the increased IR & D technical evaluation activity (including evaluation of IR & D Technical Plans and on-site reviews) is being followed closely. Further, the associated need to support contracting people in the determination of the relevancy of the bid and proposal effort has increased the DOD workload. It will be some time before an effective evaluation of the impact of these requirements can be made.

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SUMMARY OF INDEPENDENT RESEARCH AND DEVELOPMENT AND BID AND PROPOSAL COSTS INCURRED BY MAJOR DEFENSE CONTRACTORS IN THE YEARS 1970 AND 1971

FOREWORD

This summary report presents the latest available Defense Contract Audit Agency (DCAA) statistics, estimated to the extent necessary, on the independent research and development (IR&D) and bid and proposal (B&P) payments made to major defense contractors. The statistical data are submitted for inclusion in the annual report to be submitted by the Secretary of Defense to the Congress on or before March 15, 1972, in accordance with paragraph (c), Section 203, Public Law 91–441. The data set forth in this statistical summary report are similar in nature to the information previously furnished to the Office of the Assistant Secretary of Defense (Installations and Logistics (OASDI) (I&L)), for contractor fiscal years 1969 and 1970.

The summary on page 1 is an overall presentation of IR&D and B&P costs incurred by 84 major defense contractors during their fiscal years 1970 and 1971, amounts accepted by the Government, and the Department of Defense (DoD) share of amounts so accepted. The column "Amount Accepted by the Government" contains amounts considered allowable and allocable to all contractor work performed—Government and commercial. The DoD share of the costs accepted each year is the contractor's actual allocation of such costs to DoD work. In addition, this summary shows related sales achieved by the 84 contractors, comprising 175 reporting divisions and/or operating groups.

The defense contractors represented in this summary are those who had an annual auditable volume of costs incurred of $15 million or more as of December 31, 1971, and other contractors who, although not meeting the auditable volume criterion required 4,000 or more man-hours of DCAA's direct audit effort per year. As in prior DCAA reports, contractors specifically excluded from this summary are construction companies; educational institutions, foreign contractors and overseas operations of U.S. contractors; Government-owned, contractor-operated (GOCO) plant contractors; insurance companies; Job Corps Training Center contractors; major laboratories (Jet Propulsion Laboratory, California Institute of Technology Applied Physics Laboratory, John Hopkins University; etc.); marine transport contractors; and military medicare contractors. These contracting activities incurred nominal or no IR&D and B&P costs. Details in support of the summary are contained in a separate statistical report, designated "for official use only," copies of which are available through OASD (I&L) or DCAA.

DCAA obtained the IR&D and B&P cost and sales data from contractors' records, but such data do not necessarily represent audited amounts. Included in the costs shown are amounts accepted by the Government in overhead negotiations and through advance agreements. Where actual cost and sales data were not available, as in the case of calendar year contractors who had not completed the closing of their books for 1971, DCAA auditors obtained reasonable estimates. It should be noted that the contractor divisions and/or operating groups that are listed in DCAA's detailed supporting report. DCAA did not attempt to determine the reasons for increases or decreases in contractor costs and sales between the years 1970 and 1971.

Minor changes were made for this report in the definition of a "major contractor" and in the computation of the DoD share of IR&D and B&P costs; the changes did not significantly affect the amounts reported herein. As can be seen on the first summary, the DoD share for the year 1970 totals $654 million compared with $622 million stated in DCAA's report of March 1971. The difference of $32 million is accounted for by (i) an increase of $12 million due to the change in definition of "major contractor," (ii) an increase of $2 million representing the change in methods of allocating accepted amounts, and (iii) adjustments to previously reported amounts, including updating of estimates to actuals, totaling $18 million.

The summary on page 2 indicates the extent of advance agreements in effect during either one or both years. The summary on page 3 shows costs not subject to advance agreements.

SUMMARY OF INDEPENDENT RESEARCH AND DEVELOPMENT AND BID AND PROPOSAL COSTS INCURRED AND SALES ACHIEVED BY MAJOR DEFENSE CONTRACTORS—FOR CONTRACTOR FISCAL YEARS 1970 AND 1971

[In millions of dollars]

| | 1970 | | | 1971 | | |
|---|---|---|---|---|---|---|
| | Costs incurred | Amount accepted by government | DOD share | Costs incurred | Amount accepted by government | DOD share |
| Independent research and development (I.R. & D.) | 753 | 597 | 376 | 707 | 572 | 356 |
| Bid and proposal (B. & P.) | 414 | 398 | 278 | 421 | 387 | 271 |
| Total, I.R. & D. and B. & P. costs | 1,167 | 995 | 654 | 1,128 | 959 | 627 |
| Sales, total Government and commercial | 32,519 | | | 29,884 | | |
| Sales, total DOD | | 21,315 | | | 19,655 | |

SUMMARY OF INDEPENDENT RESEARCH AND DEVELOPMENT AND BID AND PROPOSAL COSTS INCURRED BY MAJOR DEFENSE CONTRACTORS—WITH ADVANCE AGREEMENTS

[In millions of dollars]

| | 1970 | | | 1971 | | |
|---|---|---|---|---|---|---|
| | Costs incurred | Amount accepted by Government | DOD share | Costs incurred | Amount accepted by Government | DOD share |
| Independent research and development (I.R. & D.) | 532 | 497 | 315 | 682 | 548 | 349 |
| Bid and proposal (B. & P.) | 154 | 143 | 93 | 400 | 366 | 260 |
| Total, I.R. & D. and B. & P. costs | 786 | 640 | 408 | 1,082 | 914 | 609 |

SUMMARY OF INDEPENDENT RESEARCH AND DEVELOPMENT AND BID AND PROPOSAL COSTS INCURRED BY MAJOR DEFENSE CONTRACTORS—WITHOUT ADVANCE AGREEMENTS

[In millions of dollars]

| | 1970 | | | 1971 | | |
|---|---|---|---|---|---|---|
| | Costs incurred | Amount accepted by government | DOD share | Costs incurred | Amount accepted by government | DOD share |
| Independent research and development (I.R. & D.) | 121 | 100 | 61 | 25 | 24 | 7 |
| Bid and proposal (B. & P.) | 260 | 255 | 185 | 21 | 21 | 11 |
| Total, I.R. & D. and B. & P. costs | 381 | 355 | 246 | 46 | 45 | 18 |

## Defense Procurement Circular

This Defense Procurement Circular is issued by direction of the Assistant Secretary of Defense (Installations and Logistics) pursuant to the authority contained in 5 U.S. Code 301, 10 U.S. Code 2202, DOD Directive No. 4105.30, and ASPR 1–106.

All Armed Services Procurement Regulation material and other directive material published herein is effective upon receipt except as otherwise indicated.

Unless otherwise indicated in the introductory language preceding an item, each item in this Circular shall remain in effect until the effective date of that subsequent ASPR revision which incorporates the item, or until specifically canceled.

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### ITEM I—INDEPENDENT RESEARCH AND DEVELOPMENT AND BID AND PROPOSAL COSTS

Section 203 of the DOD Military Procurement Authorization Act of 1971 (PL 91–441) establishes certain requirements with respect to IR&D and B&P costs. Section 203 reads as follows:

Sec. 203. (a) Funds authorized for appropriation to the Department of Defense under the provisions of this or any other Act shall not be available after December 31, 1970, for payment of independent research and development or bid and proposal costs unless the work for which payment is made has, in the opinion of the Secretary of Defense, a potential relationship to a military function or operation and unless the following conditions are met—

(1) the Secretary of Defense, prior to or during each fiscal year, negotiates advance agreements establishing a dollar ceiling on such costs with all companies which during their last preceding fiscal year received more than $2,000,000 of independent research and development or bid and proposal payments from the Department of Defense, the advance agreements thus negotiated (A) to cover the first fiscal year of each such contractor beginning on or after the beginning of each fiscal year of the Federal Government, and (B) to be concluded either directly with each such company or with those product divisions of each such company which contract directly with the Department of Defense and themselves received more than $250,000 of such payments during their company's last preceding fiscal year;

(2) the independent research and development portions of the advance agreements thus negotiated are based on company submitted plans on each of which a technical evaluation is performed by the Department of Defense prior to or during the fiscal year covered by such advance agreements; and

(3) no payments for independent research and development or bid and proposal costs are made by the Department of Defense to any company or product division with which an advance agreement is required by subsection (a) (1) of this section, except pursuant to the terms of that agreement.

(b) In the event negotiations are held with any company or product division with which they are required under subsection (a) (1) of this section, but no agreement is reached with any such company or product division, no payments for independent research and development or bid and proposal costs shall be made to any such company or product division during the fiscal year for which agreement was not reached, except in an amount substantially less than the amount which, in the opinion of the Department of Defense, such company or product division would otherwise have been entitled to receive, subject to appeal by such company or product division under regulations to be prescribed by the Secretary of Defense.

(c) The Secretary of Defense shall submit an annual report to the Congress on or before March 15, 1971, and on or before March 15 of each succeeding year, setting forth—

(1) those companies with which negotiations were held pursuant to subsection (a) (1) of this section prior to or during the preceding fiscal year of the Federal Government, together with the results of those negotiations;

(2) the latest available Defense Contract Audit Agency statistics, estimated to the extent necessary, on the independent research and development or bid and proposal payments made to major defense contractors, whether or not covered by subsection (a) (1) of this section during the preceding calendar year; and

(3) the manner of his compliance with the provisions of this section, and any major policy changes proposed to be made by the Department of Defense in the administration of its contractors' independent research and development and bid and proposal programs.

(d) The provisions of this section shall apply only to contracts for which the submission and certification of cost or pricing data are required in accordance with section 2306(f) of title 10, United States Code.

(e) Section 403 of Public Law 91–121 (80 Stat. 204) is hereby repealed.

1. *Purpose*

The purpose of this DPC is to rescind Item I of DPC #75, furnish guidance with respect to the negotiation of advance agreements required by the Act and to provide information on future action that will be taken on IR&D and B&P costs.

2. *General*

In accordance with the provisions of 15–107 and 15–205.35, advance agreements are presently being negotiated with a number of contractors for the purpose of placing a dollar limitation on the amount of IR&D that will be recognized for allocation to DOD and NASA contracts. In some instances advance agreements also are negotiated for B&P costs. This policy is not affected by the new legislation except with respect to contractors who meet the criterion established by the law.

ASPR 15–205.3 and 15–205.35 will be revised to incorporate the provisions of the Act and to provide for mandatory negotiation of advance agreements covering IR&D and B&P with substantially more contractors than are included under the present law. Except as revised by this DPC, Section XV of ASPR shall continue to be utilized in negotiating and administering advance agreements.

3. Definitions and Interpretations of Section 203, PL 91–441.

a. Effective date—"after December 31, 1970."

Contractors meeting the criterion in paragraph 3b below in their preceding fiscal year ending on or before 31 December 1970 must negotiate advance agreements for IR&D and B&P which shall have an effective date not later than 1 January 1971. When a contractor's fiscal year coincides with the calendar year, the agreement shall cover the complete fiscal year. In other cases, the initial agreement shall cover at least the remaining portion of the fiscal year remaining after 1 January 1971. However, existing advance agreements extending beyond 31 December 1970 will be honored in full unless they provide an option under which the Government may reopen the agreement and impose the restrictions of Section 203. When advance agreement negotiations cannot be completed by 1 January 1971, interim billing and forward pricing rates, including provision for IR&D and B&P costs, should be utilized prior to and during negotiations.

The limitations of Section 203 are not applicable to costs incurred prior to 1 January 1971.

b. Companies Required to Negotiate.

Companies receiving payments, either as a prime contractor or subcontractor, in excess of a total of $2 million from DOD for IR&D and B&P in the previous fiscal year, must negotiate advance agreements cover-

ing both IR&D and B&P for their following fiscal year.

Computation of the amount of IR&D and B&P costs to determine whether the $2 million criterion was reached will include only those recoverable IR&D and B&P costs allocated to all DOD prime contracts and subcontracts during the contractor's previous fiscal year regardless of contract type or method of procurement. The computation shall include full burdening in the same manner as if the IR&D and B&P projects were contracted for except that G&A will not be applied.

For purposes of this paragraph b, the term "company" includes all divisions, subsidiaries and affiliates of the contractor under common control.

c. Organizational Level for Negotiations.

When a company meets the criterion in 3b above, required advance agreements may be negotiated at the corporate level and/or with those separate entities, such as divisions, subsidiaries and affiliates of the company, which in the preceding year allocated recoverable IR&D and B&P costs in excess of $250,000 to DOD contracts. Agreements negotiated at the corporate level may set individual ceilings for separate entities of the company.

d. Contractor Programs.

Contractors who negotiate advance agreements for IR&D and B&P with the DOD shall submit technical and financial information on their planned programs. IR&D plans shall be submitted in accordance with guidance furnished by the Armed Services Research Specialists Committee. Technical evaluations shall be performed by the Armed Services Research Specialists Committee. Contractors will be advised of the Committee's determinations with respect to "potential relationship" prior to negotiation of advance agreements. Proposals for advance agreements on B&P shall be submitted in accordance with guidance furnished by Tri-Service Departmental offices.

e. Ceilings.

Ceilings are the maximum dollar amounts of a contractors' total costs for IR&D and B&P work that will be recognized for allocation to all work of that part of the contractor's operation covered by an advance agreement (see ASPR Section XV). A separate ceiling for IR&D and B&P shall be established for each advance agreement negotiated. In negotiating a ceiling, in addition to other considerations, particular attention must be paid to the "potential relationship" aspect of the contractor's planned IR&D and B&P programs (see paragraph 3f below). The portion of the ceiling estimated to be allocable to DOD contracts shall not exceed the total estimated costs of the contractor's planned IR&D and B&P work having a "potential relationship" to a military function or operation.

Contractual pricing actions, based on actual or estimated costs as appropriate, shall not include amounts in excess of each transaction's allocable share of the ceiling.

The amounts of incurred IR&D and B&P costs recoverable on DOD contracts shall not exceed (i) such contracts' allocable share of the ceiling and (ii) the total costs of the contractor's IR&D and B&P work having a "potential relationship."

f. Potential Relationship to a Military function or operation.

With respect to IR&D, when advance agreements are required, the Armed Services Research Specialists Committee established by DODI 4105.52 as amended will make determinations of "potential relationship."

B&P costs will be considered to satisfy the "potential relationship" requirement when the contractor can demonstrate that the effort under a proposed contract or grant would have a "potential relationship" to a military function or operation.

When agreements are required, costs for IR&D and B&P work which does not have a "potential relationship" to a military function or operation are unallowable as a charge against DOD funds subject to Section 203, PL 91-441 limitations.

"Potential relationship" determinations are required only when advance agreements are required in accordance with paragraph 3b above.

g. Repeal of Section 403, PL 91-121.

Section 403 of PL 91-121, which required a 7% reduction in IR&D, B&P and OTE costs under certain circumstances, was implemented by Item I, DPC #75. Section 203, PL 91-441, repeals Section 403, PL 91-121. However, many contracts already include a provision similar to the clause suggested in DPC #75. Such provisions shall continue to be enforced as they are not affected by the repeal. In addition, FFP contracts shall not be adjusted to reinstate the 7% reduction.

4. Procedures for Implementing Section 203.

a. Identification of Contractors.

Contractors not assigned for IR&D and B&P negotiations on the "Master List of Contractors for Negotiated Overhead Rates and Advance Agreements for IR&D and B&P Costs" in DPC #83 but which meet the criterion set forth in 3c above, should contact the Department (see DPC #83 for addresses) which has the preponderance of contract and subcontract work being performed.

b. Advance Agreements Negotiated Shall Include at Least the Following:

(1) A separate dollar ceiling for IR&D and for B&P. However, provision shall be made permitting the contractor to increase recovery of costs for either IR&D or B&P above the individually negotiated ceilings, provided that recovery of costs for the other is decreased below its ceiling by a like amount.

(2) A statement that the ceilings negotiated must be allocated to all work of that part of the contractor's operation covered by the agreement consistent with ASPR Section XV. For example, if an agreement is negotiated for a division, costs incurred up to the ceiling must be allocated to all work of that division, not just to DOD contracts.

(3) A statement that the costs for IR&D and B&P work recoverable under contracts citing DOD funds subject to Section 203, PL 91-441 limitations shall not exceed (i) such contracts' allocable share of the ceiling and (ii) the total costs of the contractor's IR&D and B&P work determined to have a "potential relationship."

(4) A statement that estimated costs or actual costs incurred, as appropriate, not in excess of the ceilings negotiated shall be used in the pricing of all contractual actions when negotiations are based on elements of cost and in final price determinations.

c. Reduced Payment of IR&D and B&P Costs.

In the event negotiations are held with a contractor meeting the $2 million criterion and an advance agreement is not reached, payment for IR&D and B&P costs is required to be reduced substantially below that which the contractor would otherwise have received. The amount of such reduced payment shall not exceed 75% of the amount to which, in the opinion of the contracting officer, the contractor would be entitled to receive under an advance agreement. Written notification of the contracting officer's determination of a reduced amount shall be provided the contractor.

d. Appeals by Contractors From Decisions Regarding IR&D and B&P.

Contractors may appeal decisions of the contracting officer to reduce payments under paragraph 4c. For the purpose of hearing and deciding such appeals, each Department will establish appeals hearing groups consisting of the following:

A representative to be designated by the Assistant Secretary (Installations and Logistics) who shall be Chairman;

A representative to be designated by the Assistant Secretary (Research and Development);

A representative to be designated by the General Counsel or Judge Advocate General of the Department.

Determinations of the Departments shall be the final and conclusive determination of the Department of Defense.

Notice of intent to appeal shall be filed within 30 days of receipt of a decision and will be processed through the cognizant Tri-Service Departmental office.

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DEFENSE PROCUREMENT CIRCULAR

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ITEM I—INDEPENDENT RESEARCH AND DEVELOPMENT AND BID AD PROPOSAL COSTS

Item I of DPC #84 provides guidance for implementation of Section 203, of the Military Procurement Authorization Act of 1971 (PL 91-441). Paragraph 3b titled "*Companies Required to Negotiate*" establishes the criteria for determining which companies are required to negotiate advance agreements. It has been determined that these criteria should be modified to authorize contracting officers to waive the negotiation requirement when contractors do not have significant amounts of DoD work that will be affected. Accordingly, paragraphs 3b and 4c of DPC #84 are hereby rescinded and superseded by the following:

3. Definitions and Interpretations of Section 203, PL 91-441.

b. Companies Required to Negotiate.

Any company which received payments, either as a prime contractor or subcontractor, in excess of $2 million from the DoD for IR&D and B&P in a fiscal year, is required to negotiate an advance agreement with the Government which establishes a ceiling for allowability of IR&D and B&P costs for the following fiscal year. Computation of the amount of IR&D and B&P costs to determine whether the $2 million criterion was reached will include only those recoverable IR&D and B&P costs allocated to all DoD prime contracts and subcontracts during the company's previous fiscal year regardless of contract type of method of procurement. The computation shall include full burdening in the same manner as if the IR&D and B&P projects were contracted for except that G&A will not be applied. Companies which, although meeting the $2 million criterion above, did not allocate more than $2 million to contracts for which the submission and certification of cost or pricing data was required in accordance with Section 2306(f) of Title 10, United States Code, may request an exemption from the requirement for an advance agreement. The contracting officer (see paragraph 4a below) shall grant their request if the combined dollar value of commercial work and DoD contracts awarded on the basis of price competition, catalog or market price or price set by law or regulation

is so substantial in comparison to the value of DoD contracts awarded by negotiation on the basis of cost or pricing data that advance agreements for IR&D and B&P are not needed to protect the interest of the Government.

For purposes of this paragraph b, the term "company" includes all divisions, subsidiaries and affiliates of the contractor under common control.

4. Procedures for Implementing Section 203.

c. Reduced Payment of IR&D and B&P costs.

In the event negotiations are held with a contractor meeting the criteria established in 3b and an advance agreement is not reached, payment for IR&D and B&P costs is required to be reduced substantially below that which the contractor would otherwise have received. The amount of such reduced payment shall not exceed 75% of the amount to which, in the opinion of the contracting officer, the contractor would be entitled to receive under an advance agreement. Written notification of the contracting officer's determination of a reduced amount shall be provided to the contractor.

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CONTENTS

ITEM 1—INDEPENDENT RESEARCH AND DEVELOPMENT AND BID AND PROPOSAL COSTS

1. Purpose.

The purpose of the item is to revise the cost principles for Independent Research and Development (IR&D) (15–205.35) and Bid and Proposal (B&P) (15–205.3).

2. Effective Date.

The revised cost principles for IR&D and B&P costs shall be effective with respect to contracts entered into at the beginning of the first fiscal year of the contractor which starts on or after January 1, 1972. However, in publishing these revised principles, it is recognized that certain of their requirements will, in some instances, necessitate changes in the way contractors classify, allocate, and otherwise account for IR&D and B&P costs. To reduce the impact of the changes, the cognizant departmental office listed on page 9 of DPC 83 may, at the request of any contractor required to negotiate, grant an extension of effective date to permit phased implementation of accounting changes, but not beyond the beginning of the contractor's fiscal year following 30 June 1972. The cognizant administrative contracting officer may grant such extensions to other contractors. Any extension should be in the form of an advance agreement.

Existing contracts should be amended to incorporate the revised cost principles if it will be to the advantage of the Government.

Application of the formula to determine reasonableness of costs requires the use of historical information. Such information may not be readily available or may not have been accumulated in accordance with the definitions and procedures contained in the new cost principles. Therefore, analyses may be necessary to provide a basis for the resolution of problems encountered in implementing the new cost principles. Such analyses should give consideration to factors such as (a) differences in definitions between the old and new ASPR cost principles, and (b) differences between the prior practices of contractors regarding indirect cost allocations and the burdening requirements of the new cost principles.

Required revisions in contractors' accounting practices to provide future cost data in the form needed should be made effective for the contractors' first fiscal year starting on or after January 1, 1972. Government contracting officers, negotiators, and auditors should work together, and with contractors, to identify, analyze, and resolve the problems involved in implementing the revised cost principles and in providing for the systematic accumulation of needed data.

3. Revision of Paragraph 3b of Item I of DPC 87.

Item I of DPC 87 provided a revised paragraph 3b "Companies Required to Negotiate." Effective upon receipt of this DPC, that paragraph is rescinded and superseded by the following:

"b. Companies Required to Negotiate.

Any company which received payments, either as a prime contractor or subcontractor, in excess of $2 million from the DOD for IR&D and B&P in a fiscal year, is required to negotiate an advance agreement with the Government which establishes a ceiling for allowability of IR&D and B&P costs for the following fiscal year. Computation of the amount of IR&D and B&P costs to determine whether the $2 million criterion was reached will include only those recoverable IR&D and B&P costs allocated during the company's previous fiscal year to all DOD prime contracts and subcontracts for which the submission and certification of cost or pricing data was required in accordance with Section 2306(f) of Title 10, United States Code. The computation shall include full burdening in the same manner as if the IR&D and B&P projects were contracted for except that G&A will not be applied.

For purposes of this paragraph b, the term "company" includes all divisions, subsidiaries, and affiliates of the contractor under common control."

4. Revision of Paragraphs 15–205.3 and 15–205.35.

Revised cost principles for IR&D and B&P are as follows:

15–205.35 Independent Research and Development Costs.

(a) *Definitions.* A contractor's independent research and development effort (IR&D) is that technical effort which is not sponsored by, or required in performance of, a contract or grant and which consists of projects falling within the following three areas: (i) basic and applied research, (ii) development, and (iii) systems and other concept formulation studies. IR&D effort shall not include technical effort expended in the development and preparation of technical data specifically to support the submission of a bid or proposal. For the purposes of this paragraph:

(1) *Basic research* is that research which is directed toward increase of knowledge in science. The primary aim of basic research is a fuller knowledge or understanding of the subject under study, rather than any practical application thereof.

(2) *Applied research* is that effort which (A) normally follows basic research, but may not be severable from the related basic research, (B) attempts to determine and exploit the potential of scientific discoveries or improvements in technology, materials, processes, methods, devices, or techniques, and (C) attempts to advance the state of the art. Applied research does not include efforts whose principal aim is design, development, or test of specific items or services to be considered for sale; these efforts are within the definition of the term "development," defined below.

(3) *Development* is the systematic use, under whatever name, of scientific and technical knowledge in the design, development, test, or evaluation of a potential new product or service (or of an improvement in an existing product or service) for the purpose of meeting specific performance requirements or objectives. Development shall include the functions of design engineering, prototyping, and engineering testing.

(4) *Systems and other concept formulation studies* are analyses and study efforts either related to specific IR&D efforts or directed toward the identification of desirable new systems, equipments or components, or desirable modifications and improvements to existing systems, equipments, or components.

(5) *Company* includes all divisions, subsidiaries, and affiliates of the contractor under common control.

(b) *Composition of Costs.* IR&D costs shall include not only all direct costs, but also all allocable indirect costs except that general and administrative costs shall not be considered allocable to IR&D. Both direct and indirect costs shall be determined on the same basis as if the IR&D project were under contract.

(c) *Allocation.* As a general rule, IR&D costs shall be allocated to contracts on the same basis as the general and administrative expense grouping of the profit center (see 3–1003.3) in which such costs are incurred. However, where IR&D costs clearly benefit other profit centers, or the entire company, such costs shall be allocated through the G&A of such other profit centers or through the corporate G&A, as appropriate. In those instances when allocation of IR&D through the G&A base does not provide equitable cost allocation, the contracting officer may approve use of a different base. Where allowable IR&D is established by advance agreement pursuant to (d)(1) below, the advance agreement shall specify the allocation procedures.

(d) *Allowability.* Except as provided in (e) below, costs for IR&D are allowable only in accordance with the following:

(1) *Companies Required to Negotiate Advance Agreements (CWAS–NA).*

(A) Any company which received payments, either as a prime contractor or subcontractor, in excess of $2 million from the DoD for IR&D and B&P in a fiscal year, is required to negotiate an advance agreement with the Government which establishes a ceiling for allowability of IR&D costs for the following fiscal year. Computation of the amount of IR&D and B&P costs to determine whether the $2 million criterion was reached will include only those recoverable IR&D and B&P costs allocated during the company's previous fiscal year to all DoD prime contracts and subcontracts for which the submission and certification of cost or pricing data was required in accordance with Section 2306(f) of Title 10, United States Code. The computation shall include full burdening in the same manner as if the IR&D and B&P projects were contracted for except that G&A will not be applied.

(B) When a company meets the criterion in (A) above, required advance agreements may be negotiated at the corporate level and/or with those profit centers (see 3–1003.3) which contract directly with the DoD and which in the preceding year allocated recoverable IR&D and B&P costs in exces of $250,000 including burdening as in (A) above, to DoD contracts and subcontracts for which the submission and certification of cost or pricing data was required in accordance with Section 2306(f) of title 10, United States Code. When ceilings are negotiated for separate profit centers of the company, the allowability of IR&D costs for any center which, in its previous fiscal year, allocated less than $250,000 of IR&D and B&P costs to such DoD contracts and subcontracts may be determined in accordance with (d)(2) below.

(C) Companies which meet the threshold in (A) above shall submit technical and financial information to support their proposed IR&D program in accordance with guidance furnished by the Armed Services Research Specialists Committee. Results of the technical evaluation performed by the Armed Services Research Specialists Committee, including determination of potential relationship, will be made available to the contractor by the cognizant Departmental central office.

(D) Ceilings are the maximum dollar amounts of total costs for IR&D work that will be allowable for allocation to all work of that part of the company's operation covered by an advance agreement. Within the ceiling limitations contractors will not be required to share IR&D costs. In negotiating a ceiling, in addition to other considerations, particular attention must be paid to such factors as:

(i) The technical evaluation of the Armed Services Research Specialists Committee including the potential relationship of IR&D projects to a military function or operation.

(ii) Comparison with previous year's programs including the level of the Government's participation.

(iii) Changes in the Company's business activities.

(E) The total amount of IR&D costs allocated to DoD contracts pursuant to this subparagraph (1) shall not exceed the total of expenditures for IR&D projects with a potential relationship to a military function or operation. For contracts which do not provide for cost determinations on a historical basis, this requirement will be considered to have been met if the estimated IR&D costs allocated to the contract do not exceed its proportionate share of the total estimated costs of IR&D with a potential relationship to a military function or operation.

(F) No IR&D costs shall be allowable if a company fails to initiate negotiation of a required advance agreement prior to the end of the fiscal year for which the agreement is required.

(G) When negotiations are held with a company meeting the $2 million criterion or with separate profit centers (when negotiations are held at that level under (B) above) and an advance agreement is not reached, payment for IR&D costs is required to be reduced substantially below that which the company or profit center would otherwise have received. The amount of such reduced payment shall not exceed 75% of the amount which, in the opinion of the contracting officer, the company or profit center would be entitled to receive under an advance agreement. Written notification of the contracting officer's determination of a reduced amount shall be provided the contractor. In the event that an advance agreement is not reached prior to the end of the contractor's fiscal year for which such agreement is to apply, negotiations shall immediately be terminated and the contracting officer's determination of the reduced amount shall be furnished.

(H) Contractors may appeal decisions of the contracting officer to reduce payments. Such appeal shall be filed with the contracting officer within 30 days of receipt of a decision. For the purpose of hearing and deciding such appeals, each department will establish an appeals hearing group consisting of the following:

(i) A representative to be designated by the Assistant Secretary (Installations and Logistics) or the Director, DSA, who shall be Chairman;

(ii) A representative to be designated by the Assistant Secretary (Research and Development) or ODDR&E in the case of DSA; and

(iii) A representative to be designated by the General Counsel, Judge Advocate General of the Department or Counsel of DSA.

Determinations of the appeals group shall be the final and conclusive determination of the Department of Defense.

(I) Advance agreements negotiated shall include at least the following:

(i) A separate dollar ceiling for IR&D. However, provision shall be made permitting the contractor to recover costs for IR&D above the negotiated ceiling, provided that recovery of B&P costs covered by the same agreement is decreased below its ceiling by a like amount.

(ii) A provision stating how IR&D costs are to be allocated (see (c) above).

(iii) A statement that the costs for IR&D work recoverable under contracts citing DoD funds subject to Section 203, P.L. 91–441 limitations shall not exceed *A* such contracts' allocable share of the ceiling, and *B* the total costs of the contractor's IR&D determined to have a potential relationship to a military function or operation.

(iv) A statement that estimated costs or actual costs incurred, as appropriate, not in excess of the ceilings negotiated shall be used in the pricing of all contractual actions when negotiations are based on elements of cost and in final price determinations.

(J) Prior to the execution of an advance agreement, the IR&D factor to be used for forward pricing and interim billing will be developed by and obtained from the cognizant central office of the Department responsible for negotiating IR&D advance agreements. The IR&D factor shall exclude estimated or actual costs for projects considered unrelated to a military function or operation.

(2) *Companies Not Required to Negotiate Advance Agreements (CWAS).* Allowable IR&D costs for companies not required to negotiate advance agreements in accordance with (1) above shall be established by a formula, either on a company-wide basis or by profit centers, computed as follows:

(i) Determine the ratio of IR&D costs to total sales (or other base acceptable to the contracting officer) for each of the preceding three years and average the two highest of these ratios; this average is the IR&D historical ratio;

(ii) Compute the average annual IR&D costs (hereafter called average), using the two highest of the preceding three years;

(iii) IR&D costs for the center for the current year which are not in excess of the product of the center's actual total sales (or other accepted base) for the current year and the IR&D historical ratio computed under (i) above (hereafter called product) shall be considered allowable only to the extent the product does not exceed 120% of the average. If the product is less than 80% of the average, costs up to 80% of the average shall be allowable.

(iv) Costs which are in excess of the ceiling computed in (iii) above are not allowable except where the ceiling computed for bid and proposal cost under 15–205.3 is reduced in an amount identical to the amount of any increase over the IR&D ceiling computed in (iii) above.

However, at the discretion of the contracting officer, an advance agreement may be negotiated when the contractor can demonstrate that the formula would produce a clearly inequitable cost recovery. The requirements of (d)(1) above are not mandatory for such agreements.

(e) *Deferred Costs (CWAS–NA).* IR&D costs which were incurred in previous accounting periods are unallowable, except when a contractor has developed a specific product at his own risk in anticipation of recovering the development costs in the sale price of the product provided that:

(1) The total amount of IR&D costs applicable to the product can be identified,

(2) The proration of such costs to sales of the product is reasonable,

(3) The contractor had no Government business during the time that the costs were incurred or he did not allocate IR&D costs to Government contracts except to prorate the cost of developing a specific product to the sales of that product, and

(4) No costs of current IR&D programs are allocated to Government work except to prorate the costs of developing a specific product to the sales of that product.

When deferred costs are recognized, the contract (except firm fixed-price and fixed-price with escalation) will include a specific provision setting forth the amount of deferred IR&D costs that are allocable to the contract. The negotiation memorandum will state the circumstances pertaining to the case and the reason for accepting the deferred costs.

15–205.3 *Bid and Proposal Costs.*

(a) *Definitions.*

(1) *Bid and proposal (B&P) costs* are the costs incurred in preparing, submitting, and supporting bids and proposals (whether or not solicited) on potential Government or non-Government contracts which fall within the following:

(A) *Administrative costs* including the cost of the nontechnical effort for the physical preparation of the technical proposal documents and also the cost of the technical and nontechnical effort for the preparation and publication of the cost data and other administrative data necessary to support the contractor's bids and proposals, and

(B) *Technical costs* incurred to specifically support a contractor's bid or proposal, including the costs of system and concept formulation studies and the development of engineering and production engineering data.

(2) *Company* as used in this paragraph includes all divisions, subsidiaries, and affiliates of the contractor under common control.

(b) *Composition of Costs.* B&P costs shall include not only all direct costs but also all allocable indirect costs except that general and administrative (G&A) costs shall not be considered allocable to B&P. Both direct and indirect costs shall be determined on the same basis as if each B&P project were under contract.

(c) *Allocation.* As a general rule, B&P costs shall be allocated to contracts on the same basis as the general and administrative expense grouping of the profit center (see 3–1003.3) in which such costs are incurred. However, where B&P costs clearly benefit other profit centers, or the entire company, such costs shall be allocated through the G&A of such other profit centers or through the corporate G&A, as appropriate. In those instances when allocation of B&P through the G&A base does not provide equitable cost allocation, the contracting officer may approve use of a different base. Where allowable B&P is established by advance agreement pursuant to (d)(2)(A) below, the advance agreement shall specify the allocation procedures.

(d) *Allowability.*

(1) B&P administrative costs, when not separately identified and classified as B&P costs in accordance with the contractor's normal accounting practice, are allowable in accordance with the general principles of this Part 2 and are not subject to 2(A) and (B) below.

(2) All other B&P costs (including all technical costs and any administrative costs separately identified and classified as B&P costs in accordance with the contractor's normal accounting practice) are allowable only in accordance with the following:

(A) *Companies Required to Negotiate Advance Agreements (CWAS–NA)*

(i) Any company which received payments, either as a prime contractor or subcontractor, in excess of $2 million from the DoD for IR&D and B&P in a fiscal year, is required to negotiate an advance agreement with the

Government which establishes a ceiling for allowability of B&P costs for the following fiscal year. Computation of the amount of IR&D and B&P costs to determine whether the $2 million criterion was reached will include only those recoverable IR&D and B&P costs allocated during the company's previous fiscal year to all DoD prime contracts and subcontracts for which the submission and certification of cost or pricing data was required in accordance with Section 2306(f) of Title 10, United States Code. The computation shall include full burdening in the same manner as if the IR&D and B&P projects were contracted for except that G&A will not be applied.

(ii) When a company meets the criterion in (i) above, required advance agreements may be negotiated at the corporate level and/or with those profit centers (see 3–1003.3) which contract directly with the DoD and which in the preceding year allocated recoverable IR&D and B&P costs in excess of $250,000 including burdening as in (i) above, to DoD contracts and subcontracts for which the submission and certification of cost or pricing data was required in accordance with Section 2306(f) of Title 10, United States Code. When ceilings are negotiated for separate profit centers of the company, the allowability of B&P costs for any center which, in its previous fiscal year, allocated less than $250,000 of IR&D and B&P costs to such DoD contracts and subcontracts may be determined in accordance with (B) below.

(iii) Companies which meet the threshhold in (i) above shall submit information to support their proposed B&P program in accordance with guidance furnished by the cognizant Tri-Service Departmental Office.

(iv) Ceilings are the maximum dollar amounts of total costs for B&P work that will be allowable for allocation ot all work of that part of the company's operation covered by an adverse agreement. Within the ceiling limitations contractors will not be required to share B&P costs. In negotiating a ceiling, in addition to other considerations particular attention must be paid to such factors as:

A. The determination of the potential relationship of B&P projects to a military function or operation (see (v) below).

B. Comparison with previous year's programs including the level of the Government's participation.

C. Changes in the company business activities.

D. The extent to which the contractor's B&P program is well planned and managed.

(v) The total amount of B&P costs allocated to DoD contracts pursuant to this subparagraph (A) shall not exceed the total of expenditures for B&P projects with a potential relationship to a military function or operation. For contracts which do not provide for cost determinations on a historical basis, this requirement will be considered to have been met if the estimated B&P costs allocated to the contract do not exceed its proportionate share of the total estimated costs of B&P with a potential relationship to a military function or operation. B&P costs will be considered to satisfy the potential relationship requirement when the contractor can demonstrate that the effort under a proposed contract or grant would have a potential relationship to a military function or operation. The potential relationship of B&P will be determined by the contracting officer, and he will make the results of his determination available to the contractor.

(vi) No B&P costs shall be allowable if a company fails to initiate negotiations of a required advance agreement prior to the end of the fiscal year for which the agreement is required.

(vii) When negotiations are held with a company meeting the $2 million criterion or with separate profit centers (when negotiations are held at that level under (ii) above) and an advance agreement is not reached, payment for B&P costs is required to be reduced substantially below that which the company or profit center would otherwise have received. The amount of such reduced payment shall not exceed 75% of the amount which, in the opinion of the contracting officer, the company or profit center would be entitled to receive under an advance agreement. Written notification of the contracting officer's determination of a reduced amount shall be provided the contractor. In the event that an advance agreement is not reached prior to the end of the contractor's fiscal year for which such agreement is to apply, negotiations shall immediately be terminated and the contracting officer's determination of the reduced amount shall be furnished.

(viii) Contractors may appeal decisions of the contracting officer to reduce payments. Such appeal shall be filed with the contracting officer within 30 days of receipt of a decision. For the purpose of hearing and deciding such appeals, each Department will establish an appeals hearing group consisting of the following:

A. A representative to be designated by the Assistant Secretary (Installations and Logistics) or the Director, DSA, who shall be Chairman;

B. A representative to be designated by the Assistant Secretary (Research and Development), or ODDR&E in the case of DSA; and

C. A representative to be designated by the General Counsel, Judge Advocate General of the Department, or Counsel of DSA.

Determinations of the appeals group shall be the final and conclusive determination of the Department of Defense.

(ix) Advance agreements negotiated shall include at least the following:

A. A separate dollar ceiling for B&P. However, provision shall be made permitting the company to recover costs for B&P above the negotiated ceiling, provided that recovery of IR&D costs (see 15–205.35) covered by the same agreements is decreased below its ceiling by a like amount.

B. A provision stating how B&P costs are to be allocated (see (c) above.)

C. A statement that the costs for B&P work recoverable under contracts citing DoD funds subject to Section 203, P.L. 91–441 limitations shall not exceed (i) such contracts' allocable share of the ceiling, and (ii) the total costs of the contractor's B&P determined to have a potential relationship to a military function or operation.

D. A statement that estimated costs or actual costs incurred, as appropriate, not in excess of the ceilings negotiated shall be used in the pricing of all contractual actions when negotiations are based on elements of cost and in final price determinations.

(x) Prior to the execution of an advance agreement, the B&P factor to be used for forward pricing and interim billing will be developed by and obtained from the cognizant central office of the Department responsible for negotiating B&P advance agreements. The B&P factor shall exclude estimated or actual costs for projects considered unrelated to a military function or operation.

(B) Companies Not Required to Negotiate Advance Agreements (CWAS). Allowable B&P costs for companies not required to negotiate advance agreements in accordance with (A) above shall be established by a formula, either on a company-wide basis or by profit centers, computed as follows:

(i) Determine the ratio of B&P costs to total sales (or other base acceptable to the contracting officer) for each of the preceding three years and average the two highest of these ratios; this average is the B&P historical ratio;

(ii) Compute the average annual B&P costs (hereafter called average), using the two highest of the preceding three years;

(iii) B&P costs for the center for the current year which are not in excess of the product of the center's actual total sales (or other accepted base) for the current year and the B&P historical ratio computed under (i) above (hereafter called product) shall be considered allowable only to the extent the product does not exceed 120% of the average. If the product is less than 80% of the average, costs up to 80% of the average shall be allowable.

(iv) Costs which are in excess of the ceiling computed in (iii) above are not allowable except where the ceiling computed for IR&D cost under 15–205.35 is reduced in an amount identical to the amount of any increase over the B&P ceiling computed in (iii) above.

However, at the discretion of the contracting officer, an advance agreement may be negotiated when the contractor can demonstrate that the formula would produce a clearly inequitable cost recovery. The requirements of (d) (2) (A) above are not mandatory for such agreements.

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ESTABLISHMENT OF POLICY FOR, AND TECHNICAL EVALUATION OF, INDEPENDENT RESEARCH AND DEVELOPMENT PROGRAMS

Reference: (a) Armed Services Procurement Regulation (ASPR) 15–205.35:

I. PURPOSE

This Instruction prescribes the role, mission and composition of the Independent Research and Development (IR&D) Policy Council. Further, it assigns responsibilities and outlines procedures for the technical evaluation and review of contractor Independent Research and Development (IR&D) programs, as defined in reference (a).

II. APPLICABILITY

The provisions of this Instruction apply to the elements of the Office of the Secretary of Defense and to the Departments of the Army, the Navy, and the Air Force.

III. DEFINITIONS

A. The *IR&D Policy Council* is an organization charged with developing and securing Secretary of Defense approval, and disseminating DoD policy and guidance essential to the administration of the DoD IR&D program, and related Bid and Proposal (B&P) activities.

B. *Relevant IR&D projects* are those that are considered to have a potential relationship to a military function or operation. IR&D projects aimed only at commercial or non-DoD areas of interest are not considered relevant. Relevancy determination is part of the evaluation process.

C. *A lead Department* is the Military Department responsible for arranging and conducting on-site reviews and for coordinating and summarizing technical evaluations of project descriptions in brochures.

IV. RESPONSIBILITIES AND PROCEDURES

A. *The Director of Defense Research and Engineering* (DDR&E), as Chairman of the IR&D Policy Council, shall be responsible for convening the Council and for taking such actions as may be appropriate in carrying out the mission of the Council in accordance with its Charter (Enclosure 1).

B. The *Secretaries of the Military Departments* shall be responsible for the following:

1. *Evaluation of Project Descriptions.* Evaluate the written descriptions of IR&D projects (generally referred to as brochures) furnished by companies, and submit to the lead Department either a written evaluation reprogram or a statement of the reason it was not evaluated. The lead Department shall verify that the overall evaluation has covered at least 90 percent of the dollar value of each company's IR&D program to ensure that the evaluation is valid.

2. *On-Site Review of Projects.* Conduct an on-site review of company IR&D programs. Those companies with whom the Government negotiates advance agreements for IR&D programs reviewed on site at least once

every three years. The companies that have substantial IR&D programs but, by law, do not require advance agreements will have on-site reviews at least once every four years.

C. *IR&D Technical Evaluation Group:*

1. *Membership:*

a. Each Military Department shall designate a Departmental IR&D Manager to carry out the functions set forth in IV.C.2.

b. The DDR&E shall appoint a chairman who, with the three Departmental IR&D Managers, will constitute the IR&D Technical Evaluation Group.

2. *Responsibilities.* The IR&D Technical Evaluation Group shall:

a. Establish criteria, methodology, and evaluation forms that will be used uniformly by the Military Departments for performing the technical evaluations and ratings of company IR&D programs. Such evaluations must include, but need not be limited to, the determination of the relevance and quality of each IR&D project and the categorization of each project as research or development in accord with the ASPR definition (reference a).

b. Designate the lead Department for each company.

c. Establish uniform procedures for debriefing companies whose IR&D programs have been reviewed.

d. Determine the standard format for submitting companies' IR&D project descriptions.

e. Establish a schedule for submission of companies' IR&D brochures.

f. Establish procedures for providing the Defense Contract Administration Services with technical evaluations of company-submitted IR&D project descriptions to support their negotiation of advance agreements required by law.

g. Establish, prior to the start of each calendar year, the annual schedule for on-site IR&D reviews.

h. Establish procedures for providing the Department-designated negotiator with a technical evaluation of each IR&D program for use in determining the IR&D advance agreement with each company.

i. Provide assistance to the contracting officers on an as needed basis in determining the relevance of B&P effort.

D. *Departmental IR&D Managers' Responsibilities.* Each Departmental IR&D Manager shall:

1. Designate the organizations within his Department that are responsible for evaluating each company's IR&D projects.

2. Ensure an effective evaluation of the company-submitted IR&D project descriptions.

3. Prepare and submit to the lead Department a consolidated report of results of the evaluations performed by his Department.

4. Arrange for, and participate in, on-site IR&D reviews as required.

5. Maintain an up-to-date distribution list for IR&D brochures.

E. *Funding for Technical Evaluations.* Each year the Military Departments shall submit, in their RDT&E budgets, estimates of the expenses required to support the technical evaluations of companies' IR&D programs. Details regarding the format for submittal shall be included in the annual call for a Project Listing.

V. IMPLEMENTATION

A. The Military Departments shall inform the DDR&E of the names of their IR&D Managers within 30 days after the date of this Instruction.

B. The Military Departments shall provide two copies of implementing instructions to the DDR&E within 60 days after the date of this Instruction.

VI. EFFECTIVE DATE

This Instruction is effective immediately.

JOHN FOSTER, Jr.,
*Director of Defense Research and Engineering.*

CHARTER OF THE DOD INDEPENDENT RESEARCH AND DEVELOPMENT POLICY COUNCIL

I. PURPOSE

This charter prescribes the mission, composition, and administration of the DoD Independent Research and Development (IR&D) Policy Council.

II. MISSION

The mission of the DoD IR&D Policy Council is to develop, secure Secretary of Defense approval, and disseminate DoD policy and guidance essential to the efficient administration of the DoD IR&D program, and related Bid and Proposal (B&P) activities. This policy and guidance shall encompass such facets of the program as: the proper level of DoD support required; an outline of the goals of IR&D and B&P; the mechanisms to be employed to increase or decrease the overall level of effort; guidance necessary to assure valid potential relevancy determinations; appropriate negotiation policies; and response to Congressional inquiries.

III. COMPOSITION

The members of the DoD IR&D Policy Council will be the Director of Defense Research and Engineering, who will serve as Chairman; the Assistant Secretaries of Defense (I&L) and (C); the Assistant Secretaries for (R&D) and (I&L) from the Army, the Navy, and the Air Force. A NASA representative and an AEC representative will participate as observers.

IV. OPERATION

A. The Assistant Secretary of Defense (I&L) will designate an individual to act as Secretary to the Council.

B. The Secretary to the Council will receive from members any items for discussion; prepare the agenda and minutes of each meeting; obtain the Chairman's approval of the agenda and minutes prior to issuance.

C. The Council will meet before the end of each calendar year for the purpose of establishing the IR&D/B&P objectives and guidelines for the next calendar year. Other meetings of the Council will be held at the call of the Chairman.

D. The Council may establish such ad hoc working groups as may be required for the accomplishment of matters which come before it.

E The Council decisions will be implemented by appropriate Council members.

V. DURATION

The Council will automatically terminate upon completion of its mission of not later than two years from the effective date of its formation, whichever is earlier, unless approval is obtained in advance to continue the Council for another two-year period in accordance with Committee management directives. The activities of the Council will be evaluated annually by the Director of Defense Research and Engineering to determine if the Council should be continued.

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APPROVED GUIDELINES FOR CONTRACTOR PRESENTATION OF INDEPENDENT RESEARCH AND DEVELOPMENT INFORMATION

A contractor desiring to negotiate an advance agreement for costs of independent research and development (IR&D) projects in accordance with the provisions of ASPR 15-205.35 is requested to prepare a Technical Plan setting forth the scope and costs of such projects. The purpose of this Technical Plan is to assist in determining the allowability of the individual projects and the reasonableness of the IR&D Program in accordance with the ASPR's. The Technical Plan must be submitted within 90 days of the beginning of a company's fiscal year.

A. GENERAL GUIDANCE

1. *Compiling the Plan.* Separate copies of the Technical Plan (hereinafter called the plan) will be distributed to DoD and NASA organizations in accordance with a distribution list provided by the IR&D Technical Evaluation Group. To obtain timely review of the projects within a plan and for convenience of the IR&D Technical Evaluation Group, a plan is often separated into individual project descriptions so that it can be evaluated by several people at the same time. The plan should be compiled in such a manner that it is easy to separate and reassemble when the evaluation is completed. Because of this requirement, spiral binders should not be used. For ease in locating the plan when it is filed, the name of the company should appear on the edge of the binding.

2. *Organization of Projects.*

(a) The plan should be organized by Cosati Fields and/or Groups. This arrangement assists the IR&D Technical Evaluation Group in locating projects in their technical areas. It also makes the plan compatible with the IR&D data bank. Further, this arrangement may assist the company in certification of need to know for a technical area.

(b) Within each Cosati Field or Group, projects should be segregated as research (basic and applied), development, and systems and concept formulation studies.

(c) Within each section of the plan (covering a particular Cosati Field or Group), two things are generally helpful; first, in the beginning of the section, a paragraph or two indicating the reason for the company's interest in this particular technical area will help the IR&D Technical Evaluation Group to understand the company's purpose for this type of effort; second, because IR&D is usually only a small part of the company's R&D effort in a technical area, it will help the Evaluation Group if the plan contains a table showing the titles of recent R&D contracts in each Cosati Field and Group.

3. *Tables and Charts.* The information identified in the following tables is needed to evaluate contractor brochures.

(a) Table of Contents. This table should include a listing of each project by number and title, indicating the Cosati Field and Group into which it falls, and the page number where it is described, i.e., the information should be displayed under the following headings:

Cosati Field and Group; Project No.; Project Title; and Page No.

(b) Organization Chart. (Not printed in RECORD.)

4. *Principal Investigator Resumes.* Resumes of the principal investigators of basic research projects should be included in a separate section of the plan. Each resume should not exceed one page and should contain the following:

Full Name.
Job Title.
Years with Company.
Formal Education: field; degree; year received; university.
Work Experience.
Significant Papers and Patents.

5. *Relevancy Submittal.* If prior to the publication of a plan, the contractor provided information to the IR&D Technical Evaluation Group for a determination of potential relationship to military functions or operations, a copy of this information should be included in the plan for a comparison with the detailed project writeups.

6. *Classified Projects.* The plan should never contain known classified projects and, therefore, should not be assigned a DoD security classification. Project description with established or suggested military classifications should be compiled separately and distributed to those who have need to know. Each Service will provide a separate distribution list for classified projects. Highly sensitive company projects can also be handled in the same manner, if requested by the company.

7. *Proprietary Marking.* The plan should be marked "Company Proprietary" and not "Company Confidential" or "Company Se-

cret." The confidential and secret markings can be misinterpreted by mail handling personnel and cause problems. Each page should be marked "proprietary" so that when a page is separated from the rest of the plan it will still be controlled.

B. PROJECT INFORMATION

1. A writeup should be prepared for each IR&D project the company is planning to conduct during the Company Fiscal Year of the plan and for each project completed or cancelled in the previous year. In this context a project is defined as the smallest segment into which research and development efforts are normally divided for purposes of local administration. It is usually technically distinguishable in scope and objective from other efforts with which it may be aggregated for financial and administrative purposes. For example, a system development can include several subsystems and each of these could have several distinct technical problems. In general, an IR&D project will not be determined by size or funding level but by technical considerations. In many cases, however, it will involve not more than five nor less than one professional man year of effort.

2. Each project writeup should begin on a right hand page. This will allow for ease of separation during evaluation.

3. Each project writeup should begin with a tabular synopsis of important project information and be displayed in the format shown below. The tabular synopsis sets the stage for the evaluation of the narrative description of the project. (Not printed in RECORD.)

Descriptions of the items in the synopsis are provided below:

(a) *Project No.* Each project should be identified with a project number. This number may correspond to the assigned IR&D data bank accession number. If the company has not been assigned a block of accession numbers by DDC, or does not choose to use these numbers, the company should assign simple project numbers, i.e., arabic numbers from 1 to 999.

(b) *Category.* This should indicate one of the following categories in accordance with ASPR definition:

Basic Research.
Applied Research.
Development.
Systems and Other Concept Formulation Studies.

(c) *Start Date.* This should indicate the month and year in which the project was started, for continuing or completed projects, or the "will start" date for new projects.

(d) *Project Title.* An unclassified descriptive title should be used. This title should not refer to a specific system but to the technology or the general area of application of the study or effort.

(e) *Project Contact.* This block should contain the name and telephone number of the person in the company's performing organization who will serve as a point of contact to provide further information on the project, thus relieving the project scientists and engineers have the burden of answering many general questions. Preferably, the project contact should be someone at the managerial or supervisory level who has substantial knowledge of the project and the authority to release company information.

(f) *Related Projects in the Current Fiscal Year.* This block should indicate one to three project numbers from the current company plan which are directly related to the project being reported. This correlation of the project with others in the same year's program will assist the IR&D Technical Evaluation Group in viewing it as part of the overall program rather than as a separate entity.

(g) *Related Projects in Prior Fiscal Year Program.* This block should include the numbers of from one to three projects from the previous company fiscal year that contributed to or led to the present project. This block differs from the previous block in that it looks at a project's progression from one year to the next, rather than at parallel projects in a single year. If a project is continuing from last year, enter last year's project number followed by the words "continuing project."

(h) *Subject Category Field and Group (COSATI).* This block should indicate from one to three Subject Category Feld and Group Codes listed in Attachment 1, with the most relevant code beginning at the left portion of the block.

(i) *Estimated Project Completion Date.* For new and continuing projects, this block should indicate the anticipated completion month and year for the project. This date could be several years away in the case of a long range project or it could be an indefinite completion date in the case of a basic research project.

(j) *Estimated Professional Man-Years.* For new and continuing projects, the block should indicate the estimate (to the nearest tenth) of the professional man-years to be applied to the project in the current fiscal year.

Professional man-years are all scientific and engineering time that a scientist or technically-trained person (i.e., one who has received at least a bachelor's degree or the equivalent) expends directly on the IR&D work being reported. Excluded are skilled craftsmen, laboratory assistants, programmers, shop workers, secretaries, and other personnel providing non-technical support and services.

(k) *Actual Project Ending Date.* For projects completed or cancelled in the previous year, this block should indicate the month and year in which the projects were closed out.

(l) *Actual Professional Man-Years.* For projects completed or cancelled in the previous year the block should indicate to the nearest tenth the actual professional man-years incurred against the project in the previous fiscal year.

(m) *Key Words.* The block should contain at least five key words which relate to the subject covered by the report. A key word can be a single word or a group of words. Each key word must be unclassified. Whenever possible, use as a source of key words the Thesaurus of Engineering and Scientific Terms available through the Defense Documentation Center (AD Number 672000). Cryogenics, lightweight radar, and space vehicle navigation are examples of key words. The use of complete phrases, which include prepositions and conjunctions (e.g., navigation of space vehicles) should be avoided. Systems, subsystems, or application-oriented words are suggested for the first few key words. The title and text may describe work on a guidance or a signal processing project, but may fail to mention that it is missile guidance, not aircraft guidance, or that it is signal processing of sonar signals and not radar signals. It would be of great help to be able to distinguish the application. Many research projects may not have a specific application, but they may have an area of application. For example, materials research could have applictions to structures, coatings, electronics, optics and lubricants. Also, a group of words which is technically descriptive of the project should be selected. For example, if there was a project on a miniature stereoscopic display for a space application involving the use of laser holography, a key word chain could be maser, laser, spacecraft display, three dimensional display, Argon, holography, optics, miniaturization, navigation, reliability, high intensity.

(n) *Principal Investigator.* This block should indicate the name of the person who is in charge of the project from a technical (rather than an administrative) standpoint.

(o) *Associate Investigators.* This block should indicate the names of other professional persons who are assisting with the project.

(p) *Project Funding—Current Year.* This block should contain the estimated expenditures planned for the project within the fiscal year covered by the plan. If the "other" category is a large portion of the project's overall cost, the major effort included in the category (i.e., computer time, wind tunnel time) should be indicated.

(q) *Project Funding—Prior Year.* If the project is a cancelled, completed or continuing project, the actual expenditure charged to the project in the previous company fiscal year should be entered in this block. If the project is the continuation of a combination of several prior-year projects, the cost of the combination should not be entered. This project should be shown as a new project and the prior year projects shown as completed projects with their costs indicated separately.

5. The most important part of the plan, as far as the IR&D Technical Evaluation Group is concerned, is the project narrative section. The DoD evaluation form requires an evaluation of the objective, the approach and the progress. Experience has shown that three to five pages, including a tabular synopsis is sufficient to describe a project requiring one to five man-years of effort. The IR&D Technical Evaluation Group will look for technical facts and important details when conducting its evaluation. The narrative should include the following:

(a) *Problem.* The problem which the project is addressing should be described from a technical (not a marketing) standpoint. In the case of a completed or cancelled project, the problem to have been solved should be described.

(b) *Objective.* The project's technical objectives should be identified. If the project is to run over several years, the overall objective should be briefly stated and the particular goal for the coming year emphasized. This statement should include a description of the questions being explored, and, where appropriate, the performance goals (in quantitative terms). In the case of a completed or cancelled project, the objective to have been attained should be described.

(c) *Approach.* The approach to be used in accomplishing the objective should be described with the emphasis on the method, technique, and design approach. Technical detail, rather than schedules and milestones, should be emphasized. The specific tests or equipments, theoretical work being conducted, major technical problems, and factors which may tend to accelerate or decelerate the work should be outlined. In the case of a completed or cancelled project, the approach which was taken should be explained.

(d) *Progress.* The time period during which the progress was made should be shown. If a project is a new one, a note to that effect should be made in the report and a description of any technical background, which the investigators have that will help them to successfully complete the project, should be provided. In the case of a continuing project, the progress made in achieving the stated objective should be indicated. Facts and data should be presented whenever possible. The implication and application of results should be indicated. Charts, tables or photographs which add to the explanation of the progress should be used. Significant reports generated within the reporting period should be identified by number title, and date and listed at the end of the "Progress" section.

C. DOD CONTACTS

Any questions concerning these guidelines should be referred to the IR&D Technical

Evaluation Group member representing the Military Service responsible for negotiating the IR&D Advance Agreement with the company. The IR&D Technical Evaluation Group members representing the Services are:

Date Approved: February 1, 1972.

Army member:

JOHN W. CRELLIN,

(Army Materiel Command, AMCRD, Building T-7, Washington, D.C. 20315. Phone: (202) 697-2536.)

Navy member:

ANCEL E. COOK,

(Office of Naval Research, Code 400A1, Ballston Tower No. 1, 800 Quincy Street, Arlington, Va. 22217. Phone: (202 692-4109.)

Air Force member:

Maj. JOSEPH J. EASH,

(HQ AFSC/DLOR, Andrews Air Force Base, Washington, D.C. 20331. Phone: (301) 981-4736.)

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SUBJECT FIELD AND GROUP STRUCTURE

01 Aeronautics:
01 Aerodynamics
02 Aeronautics
03 Aircraft
04 Aircraft flight instrumentation
05 Air facilities
02 Agriculture:
01 Agricultural chemistry
02 Agricultural economics
03 Agricultural engineering
04 Agronomy and horticulture
05 Animal husbandry
06 Forestry
03 Astronomy and Astrophysics:
01 Astronomy
02 Astrophysics
03 Celestial mechanics
04 Atmospheric Sciences:
01 Atmospheric physics
02 Meteorology
05 Behavioral and Social Sciences:
01 Administration and management
02 Documentation and information technology
03 Economics
04 History, law and political science
05 Human factors engineering
06 Humanities
07 Linguistics
08 Man-machine relations
09 Personnel selection, training and evaluation
10 Psychology (*Individual and group behavior*)
11 Sociology
06 Biological and Medical Sciences:
01 Biochemistry
02 Bioengineering
03 Biology
04 Bionics
05 Clinical medicine
06 Environmental biology
07 Escape, rescue and survival
08 Food
09 Hygiene and sanitation
10 Industrial (*Occupational*) medicine
11 Life support
12 Medical and hospital equipment and supplies
13 Microbiology
14 Personnel selection and maintenance (*Medical*)
15 Pharmacology
16 Physiology
17 Protective equipment
18 Radiobiology
19 Stress physiology
20 Toxicology
21 Weapon effects
07 Chemistry:
01 Chemical engineering
02 Inorganic chemistry
03 Organic chemistry
04 Physical chemistry
05 Radio and radiation chemistry
08 Earth Sciences and Oceanography:
01 Biological oceanography
02 Cartography
03 Dynamic oceanography
04 Geochemistry
05 Geodesy
06 Geography
07 Geology and mineralogy
08 Hydrology and limnology
09 Mining engineering
10 Physical oceanography
11 Seismology
12 Snow, ice and permafrost
13 Soil mechanics
14 Terrestrial magnetism
09 Electronics and Electrical Engineering:
01 Components
02 Computers
03 Electronic and electrical engineering
04 Information theory
05 Subsystems
06 Telemetry
10 Energy Conversion (*Non-propulsive*):
01 Conversion techniques
02 Power sources
03 Energy storage
11 Materials:
01 Adhesives and seals
02 Ceramics, refractories and glasses
03 Coatings, colorants and finishes
04 Composite materials
05 Fibers and textiles
06 Metallurgy and metallography
07 Miscellaneous materials
08 Oils, lubricants, and hydraulic fluids
09 Plastics
10 Rubbers
11 Solvents, cleaners and abrasives
12 Wood and paper products
12 Mathematical Sciences:
01 Mathematics and statistics
02 Operations research
13 Mechanical, Industrial, Civil and Marine Engineering:
01 Air conditioning, heating, lighting and ventilating
02 Civil engineering
03 Constructon equipment, materials and supplies
04 Containers and packaging
05 Couplings, fasteners and joints
06 Ground transportation equipment
07 Hydraulic and pneumatic equipment
08 Industrial processes
09 Machinery and tools
10 Marine engineering
11 Pumps, filters, pipes, tubing and valves
12 Safety engineering
13 Structural engineering
14 Methods and Equipment:
01 Cost effectiveness
02 Laboratories, test facilities, and test equipment
03 Recording devices
04 Reliability
05 Reprography
15 Military Sciences:
01 Antisubmarine warfare
02 Chemical, biological, and radiological warfare.
03 Defense
04 Intelligence
05 Logistics
06 Nuclear warfare
07 Operations, strategy, and tactics
16 Missile Technology:
01 Missile launching and ground support
02 Missile trajectories
03 Missile warheads and fuzes
04 Missiles
17 Navigation, Communications, Detection and Countermeasures
01 Acoustic detection
02 Communications
03 Direction finding
04 Electromagnetic and acoustic countermeasures
05 Infrared and ultraviolet detection
06 Magnetic detection
07 Navigation and guidance
08 Optical detection
09 Radar detection
10 Seismic detection
18 Nuclear Science and Technology:
01 Fusion devices (*Thermonuclear*)
02 Isotopes
03 Nuclear explosions
04 Nuclear instrumentation
05 Nuclear power plants
06 Radiation shielding and protection
07 Radioactve wastes and fission products
08 Radioactivity
09 Reactor engineering and operation
10 Reactor materials
11 Reactor physics
12 Reactors (*Power*)
13 Reactors (*Non-power*)
14 SNAP technology
19 Ordnance:
01 Ammunition, explosives and pyrotechnics
02 Bombs
03 Combat vehicles
04 Explosions, ballistics and armor
05 Fire control and bombing systems
06 Guns
07 Rockets
08 Underwater ordnance
20 Physics:
01 Acoustics
02 Crystallography
03 Electricity and magnetism
04 Fluid mechanics
05 Masers and lasers
06 Optics
07 Particle accelerators
08 Particle physics
09 Plasma physics
10 Quantum theory
11 Solid mechanics
12 Solid state physics
13 Thermodynamics
14 Wave propagation
21 Propulsion and Fuels:
01 Air breathing engines
02 Combustion and ignition
03 Electric propulsion
04 Fuels
05 Jet and gas turbine engines
06 Nuclear propulsion
07 Reciprocating engines
08 Rocket motors and engines
09 Rocket propellants
22 Space Technology:
01 Astronautics
02 Spacecraft
03 Spacecraft trajectories and reentry
04 Spacecraft launch vehicles and ground support

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I.R. & D. ON-SITE REVIEW SCHEDULES FOR CALENDAR YEAR 1972

LEAD LABS AND ORGANIZATIONS

*Army*

Army Materiel Command, AMCRD-TE/Mr. J. W. Crellin, Bldg. T-7, Washington, D.C. 20315.

Commanding General (ECOM), U.S. Army Electronics Command, AMSEL/RD/PB, Dr. Hans Ziegler, Ft. Monmouth, New Jersey 07703.

Commanding General (MICOM), U.S. Army Missile Command, AMSMI-RB, Dr. Julian S. Kobler, Director, Redstone Arsenal, Alabama 35809.

Commanding General (AVSCOM), U.S. Army Aviation Systems Command, AMSAV-R-RP, Mr. Dunkel, P.O. Box 209 Main Office, St. Louis, Mo. 63166.

Commanding General (TACOM), U.S. Army Tank-Automotive Command, AMSTA-CR, Mr. Hayes, Warren, Michigan 48090.

*Navy*

Office of Naval Research, Code 400A1, Mr. A. Cook, Ballston Tower No. 1, 800 Quincy Street, Arlington, Va. 22217.

Director, Office of Naval Research Branch Office, Mr. M. A. Chaszeka, 536 South Clark Street, Chicago, Illinois 60605.

Director, Office of Naval Research Branch Office, Attn: Deputy Director, 1030 East Green Street, Pasadena, California 91106.

Director, Office of Naval Research Branch Office, Attn: Mr. T. B. Dowd, 495 Summer Street, Boston, Massachusetts 02210.

*Air Force*

AFSC/DLOR/Major J. J. Eash, III, AFB, Washington, D.C. 20331.

AFOSR/CCC/Major McKimie, 1400 Wilson Blvd., Arlington, Va. 22209.

AFAPL/DOY/Mr. L. McKenny, Wright-Patterson AFB, Ohio 45433.

AFFDL/DOO/Mr. J. E. Schauweker, Wright-Patterson AFB, Ohio 45433.

AFAL/DO/Mr. Y. Jacobs, Wright-Patterson AFB, Ohio 45433.

AFML/DOY/Mr. S. Bakanauskas, Wright-Patterson AFB, Ohio 45433.

ASD/ENO/Mr. H. L. Kreitzburg, Jr., Wright-Patterson AFB, Ohio 45433.

AFATL/DLOP/Capt. Roy Rawlings, Eglin AFB, Florida 32542.

AFCRL/XOP/Mr. S. Falkowske, L. G. Hanscom Field, Bedford, Mass. 01731.

RADC/DOT/Mr. W. S. Kelly, Griffiss AFB, New York 13442.

AFWL/DOPT/Mr. Aldrich, Kirtland AFB, New Mexico 87117.

AFRPL/SU/Lt. Col. A. R. Hombaker, Edwards AFB, California 93523.

SAMSO/SYO/Capt. R. K. Strome, Los Angeles AFS, California 90045.

ESD/XRJ/Mr. A. P. Trunfio, L. G. Hanscom Field, Bedford, Mass. 01731.

| Date | Company | Location | Agency | Lead |
|---|---|---|---|---|
| Jan. 25 | United Aircraft P & W | West Palm Beach, Fla | Navy | ONR Washington. |
| Jan. 26–27 | NAR, Columbus Division | Columbus, Ohio | Air Force | AFFDL. |
| Feb. 14–15 | GE, Heavy Military Electronics Div | Syracuse, N.Y. | do | RADC. |
| Feb. 10–11 | Motorola | Scottsdale, Ariz | Army | ECOM. |
| Feb. 16–17 | United Aircraft P & W | East Hartford, Conn | Navy | ONR Washington. |
| Feb. 23–25 | NAR, Space Division | Downey, Calif | Air Force | SAMSO. |
| Mar. 15–16 | TRW Equipment Group | Cleveland, Ohio | do | AFML. |
| Mar. 20–21 | Stanford Research Institute | Melno Park, Calif | Army | ECOM. |
| Mar. 22–24 | Lockheed Missiles & Space/Res. Lab | Palto Alto, Calif | Air Force | AFOSR. |
| Mar. 27–28 | Singer Kearfott | Little Falls, N.J | do | AFAL. |
| Mar. 29–30 | Texas Instrument | Dallas, Tex | Navy | ONR Chicago. |
| Mar. 29–30 | AVCO, Lycoming | Stratford, Conn | Air Force | AFAPL. |
| Apr. 4–5 | Western Electric Co | Whippeny, N.J | Army | MICOM. |
| Apr. 5–7 | McDonnell Douglas | St. Louis, Mo | Air Force | AFFDL. |
| Apr. 10–11 | Page Communications Engineers | Washington, D.C | do | RADC. |
| Apr. 12 | Sikorsky | Bridgeport, Conn | Navy | ONR Boston. |
| Apr. 13–14 | GM, Delco Electronics | Milwaukee, Wis | Air Force | AFAL. |
| Apr. 18–19 | ITEK Dorp, Optical Sys./Cen. Res. Lab | Lexington, Mass | do | AFCRL. |
| Apr. 19–21 | Bendix, Mishawaka Div | Mishawaka, Ind | Navy | ONR Chicago. |
| Apr. 19–21 | Martin Marietta | Orlando, Fla | Air Force | AFATL. |
| Apr. 24–25 | Sperry Rand Electronic Tube Div | Gainesville, Fla | do | RADC. |
| Apr. 26–27 | Sperry Rand Microwave Electronics | Clearwater, Fla | do | AFAL. |
| May 1–2 | Curtis Wright Wood-Ridge | Wood-Ridge, N.J | do | AFAPL. |
| May 2–4 | Control Data Corp | Minneapolis, Minn | do | RADC. |
| May 3–5 | Martin Marietta, Denver Div | Denver, Colo | do | SAMSO. |
| May 8 | General Electric TEMPO | Santa Barbara, Calif | do | AFWL. |
| May 9–10 | Hughes Tool Co | Los Angeles, Calif | Army | AVSCOM. |
| May 11 | Cutler Hammer A.I.L | Long Island, N.Y | Navy | ONR Boston. |
| May 9–12 | McDonnell Douglas | Huntington Beach, Long Beach, Calif | Air Force | AFFDL. |
| May 15–16 | Philco Ford, Aero. & Def. Systems | Newport Beach, Calif | Navy | ONR Pasadena. |
| May 17–18 | Philco Ford, Western Div. Labs | Palo Alto, Calif | do | Do. |
| May 15–17 | Lockheed, Calif | Burbank, Calif | Air Force | AFFDL. |
| May 18 | Lockheed Aircraft Service | Ontario, Calif | do | ASD. |
| May 22 | GE, Direct Energy Conv. Bus | West Lynn, Mass | do | AFAPL. |
| May 24 | Bendix, Nav. & Control | Teterboro, N.J | Navy | ONR Boston. |
| May 25 | Bendix, Comm. Div | Towson, Md | do | Do. |
| June 1 | Martin Marietta, Rias | Baltimore, Md | Air Force | AFOSR. |
| June 6–8 | Boeing Aerospace/BSRL/Com. Airplane Gp | Seattle, Wash | do | AFFDL. |
| June 6–7 | Raytheon | Lexington, Mass | Army | MICOM. |
| June 13–14 | Lear Siegler Instrument Div | Santa Monica, Calif | Air Force | AFAL. |
| June 15–16 | Lockheed Electronics Div | Plainfield, N.J | do | AFAL. |
| June 21–23 | TRW Systems | Redondo Beach, Calif | do | SAMSO. |
| June 26–27 | North American Atomics Int | Los Angeles, Calif | AF/ONR | ONR/AFSC. |
| July 11 | Bendix Electrodynamics | North Hollywood, Calif | Navy | ONR Pasadena. |
| July 13–14 | Sperry Rand UNIVAC | St. Paul, Minn | Air Force | RADC. |
| July 17–18 | General Dynamics, Stromberg Data-graphics | San Diego, Calif | do | RADC. |
| July 19–20 | Teledyne Ryan | do | do | AFAPL. |
| July 24–25 | Hughes Aircraft Co | Culver City and Malibu, Calif | do | AFAL. |
| July 26–27 | NAR, Science Center | Thousands Oaks, Calif | do | AFOSR. |
| Aug. 10–11 | General Dynamics Elec. Boat Div | Croton, Conn | AF/ONR | ONR/AFSC. |
| Aug. 15–16 | General Electric Avionics Cont Div | Binghamton, N.Y | Air Force | AFFDL. |
| Aug. 17–18 | Singer, Link Div | do | do | ASD. |
| Aug. 22–23 | Westinghouse, Aerospace Elec. Sys. & Electronic Support | Baltimore, Md | Navy | ONR Boston. |
| Aug. 29 | CCI Marquardt | Van Nuys, Calif | Air Force | AFRPL. |
| Sept. 6–8 | GE, Aircraft Engine Group | Evendale, Ohio | do | AFAPL. |
| Sept. 13–15 | Honeywell Basic & Applied Res | Minneapolis, Minn | do | AFOSR. |
| Sept. 19 | Philco Ford, Comm. & Tech. Services | Philadelphia, Pa | Navy | ONR Boston. |
| Sept. 26–27 | Bell Helicopter | Fort Worth, Tex | Army | AVSCOM. |
| Sept. 28–29 | Boeing Wichita Div | Wichita, Kans | Air Force | AFFDL. |
| Oct. 3–4 | RCA Govt. Systems | Camden, N.J | Navy | ONR Boston. |
| Oct. 4–5 | Solar Aircraft Co. Intl. Harvester | San Diego, Calif | do | ONR Pasadena. |
| Oct. 12–13 | E.G. & G | Bedford, Mass | Air Force | AFCRL. |
| Oct. 17–18 | PMC | Los Angeles, Calif | Army | TACOM. |
| Do | Singer, Telesignal Div | Woodbury, N.Y | Air Force | ESD. |
| Oct. 19–20 | Hazeltine | Little Neck, N.Y | do | RADC. |
| Oct. 26–27 | AVCO Precision Prod | Richmond, Ind | do | AFATL. |
| Oct. 30–31 | General Motors, Allison Engines | Indianapoplis, Ind | do | AFAPL. |
| Nov. 1–2 | General Motors, Allison | do | Army | TACOM. |
| Do | Dalmo Victor Corp | Providence, R.I | Air Force | AFAL. |
| Nov. 3 | HRB Singer | State College, Pa | do | RADC. |
| Nov. 7–9 | Northrop Corp | Hawthorne, Calif | do | AFFDL. |
| Nov. 13–14 | Chrysler Corp | Detroit, Mich | Army | TACOM. |
| Nov. 14–15 | Thiokol Chemical Corp | Brigham City, Utah | Air Force | AFRPL. |
| Nov. 15–16 | Sperry Rand Vickers Div | Detroit, Mich | do | AFAPL. |
| Nov. 27–29 | LTV | Dallas, Tex | Navy | ONR Chicago. |
| Dec. 5–6 | Grumman | Bethpage, Long Island, N.Y | do | ONR Boston. |

Mr. McINTYRE. Mr. President, this is the second year of reporting, and it covers the first full year of implementation since section 203 was enacted. The report reflects substantial progress by the Department of Defense. When I reported to the Senate a year ago on March 24, 1971, I stated that I would continue to monitor performance closely to insure that expenditures for I.R. & D., B.P. & E., and OTE are maintained within reasonable limits and that they are in strict conformance with the law. In addition, I stated that I would obtain an estimate of defense expenditures for 1971 and compare this with actual performance a year later to determine if additional legislation is needed.

The Armed Services Committee, to insure prompt and effective compliance with section 203, requested the Comptroller General, by letter dated October 5, 1971, to conduct a complete examination of all actions taken pursuant to section 203, and submit a report of findings, including appropriate comments and recommendations by April 1, 1972. As a part of the investigation, the letter requested that industry reaction and compliance be determined on a sampling

basis. I ask unanimous consent that the letter and the report of the Comptroller General, B–167034, dated April 17, 1972, be printed at this point in the RECORD.

There being no objection, the items were ordered to be printed in the RECORD, as follows:

OCTOBER 5, 1971.

Hon. ELMER B. STAATS,
*Comptroller General of the United States,*
*General Accounting Office,*
*Washington, D.C.*

DEAR MR. STAATS: Section 203 of the Military Procurement Authorization Act for Fiscal Year 1971 established permanent language involving the expenditure of funds appropriated for the purpose of Independent Research and Development (I.R.&D.). Major provisions of this section require that (a) the Secretary of Defense negotiate advance agreements each year with major defense contractors as to the dollar ceiling on funds which are to be reimbursed by the Defense for these purposes, (b) these advance agreements be based on company submitted plans which are subject to technical evaluation by Defense, (c) dollar penalties are imposed by Defense when such advance agreements cannot be reached, (d) the work for which payment is made has, in the opinion of the Secretary of Defense, a potential relationship to a military function or operation, and (e) the Secretary of Defense submit an annual report to the Congress on or before March 15 of each year advising of the results of implementation of this section.

Principal Department of Defense witnesses who appeared before the Committee in support of the Fiscal Year 1972 request stated that a series of implementing actions had been taken but that because of the late enactment of the Fiscal Year 1971 Procurement Act not enough time had passed to measure the effectiveness of the implementing actions.

Since this subject is a matter of special significance to the Committee, request that a complete examination be conducted of all of the actions that have been taken pursuant to Section 203 of Public Law 91–441, and a report of findings, including any appropriate comments and recommendations, be submitted to the Committee not later than April 1, 1972.

In conducting this investigation, an effort should be made to determine industry reaction and compliance on a sampling basis. In this connection, there have been some reports from industry that the implementing actions of the Department of Defense are more stringent than intended by the language of the law. The Committee does not necessarily disagree with such actions by the Department of Defense but is interested in determining the specific facts.

Your prompt attention to this matter will be appreciated.

Sincerely,

JOHN C. STENNIS.

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REPORT TO THE COMMITTEE ON ARMED SERVICES, U.S. SENATE: IMPLEMENTATION OF SECTION 203, PUBLIC LAW 91–441, ON PAYMENTS FOR INDEPENDENT RESEARCH AND DEVELOPMENT AND BID AND PROPOSAL COSTS—DEPARTMENT OF DEFENSE

(By the Comptroller General of the United States)

Hon. JOHN C. STENNIS,
*Chairman, Committee on Armed Services,*
*U.S. Senate.*

DEAR MR. CHAIRMAN: As requested in your letter of October 5, 1971, we have reviewed the actions taken pursuant to Section 203 of the Military Procurement Authorization Act for Fiscal Year 1971 (P.L. 91–441, October 7, 1970). This section etsablished requirements to be met by the Department of Defense (DOD) in paying contractors the costs of the independent research and development (IR&D) and bid and proposal (B&P) efforts.

We noted the statement in your letter, attributed to principal DOD witnesses, that because of the late enactment of the 1971 Procurement Act, not enough time had passed to measure the effectiveness of DOD's implementing actions. Section 203 became effective January 1, 1971. Although steps were taken by DOD at that time to implement the law, not all actions were completed at the time of our review. For example, determinations of potential relationship to a military function or operation of most B&P projects had not yet been made. We believe, therefore, it is still too early to make a conclusive evaluation of either the actions taken or the effects of the provisions of Section 203; however, we will comment on these matters to the extent presently possible.

First, there are some portions of the language of Section 203 which are not sufficiently clear as to meaning or intent to enable proper evaluations of effect. For example, the law precludes DOD from paying contractors for IR&D or B&P costs unless the work has a potential relationship to a military function or operation, and unless other specified conditions are met. One of these conditions is that advance agreements be negotiated with companies which had more than $2 million of IR&D or B&P payments from DOD during their preceding fiscal years. It is not clear as to whether the intent of the law was to require a determination of potential military relationship of the projects of all companies receiving funds from DOD for IR&D and B&P, or only of companies with which advance agreements are negotiated.

We were told by a DOD official that application of a relevancy test to all defense contractors would be administratively infeasible; consequently, DOD interpreted the law as requiring the test only for major companies. We agree that DOD's interpretation is administratively sound, but suggest that the Congress may want to clarify the intent of the law.

The law also fails to provide any criteria for determining when a project has "potential relationship to a military function or operation" or any indication as to what the provision was intended to achieve. We believe that without clarification, the law can be interpreted to allow practically any IR&D or B&P project to be classified as having "potential military relationship," even though it may be primarily for commercial or nondefense purposes. This matter is discussed more fully in an attachment (appendix I) which includes examples of projects accepted as having potential military relationship, although they were undertaken primarily for nondefense purposes.

A third problem we see in the language of the law is contained in Section 203(a)(1) which requires that advance agreements be negotiated "with all companies which during their last preceding fiscal year received more than $2,000,000 of independent research and development or bid and proposal payments from the Department of Defense. . . ." In implementing this provision DOD has taken the position that the Congress intended that the $2 million should apply to IR&D and B&P combined. We believe that the DOD interpretation is realistic because of the very close relationship of IR&D and B&P costs.

Industry, however, has pointed out (see Council of Defense and Space Industry Associations' (CODSIA) letter of January 31, 1972, appendix II), that DOD's interpretation (along with its extension of the law's requirements to subcontracts, and its requirement for burdening of IR&D and B&P) could result in requiring some companies to negotiate advance agreements that would not be required to do so if the $2 million criterion were applied to IR&D and B&P separately. CODSIA referred to one such company in its letter.

We did not make a detailed study of this matter, but based on DOD-developed statistics on the amounts of contractors' IR&D and B&P costs, we doubt that more than five to ten companies would have been required to enter into advance agreements under DOD criteria that would not have been required to do so under a strict interpretation of the law. Concerning subcontracts and burdening,[1] the law neither provides nor precludes the action taken by DOD. In view of the high level of subcontracting that prevails, we believe subcontracts should be included along with prime contracts in determining if the criterion for negotiating advance agreements has been achieved. We also believe it is appropriate that IR&D and B&P costs bear their appropriate share of indirect costs.

How, to DOD's implementation of the law. We have examined all the implementing actions of DOD, as requested in your letter, to the extent possible at the present time. We reviewed the policies, practices, and procedures established and followed by DOD and the military services; reviewed records and obtained information from Government officials responsible for procurement and financial administration; and reviewed the activities of six selected contractors in complying with the law and DOD's implementing instructions. We did not examine the potential military relationship of contractors' B&P costs and contractors' subsequent changes to approved IR&D programs because insufficient time had elapsed for DOD to take action on these matters. We plan, however, to continue monitoring DOD's administration of IR&D and B&P efforts.

In our opinion, DOD has been reasonably diligent, and with the possible exceptions discussed above, the provisions of the law are being implemented. Our observations on certain major aspects of the law, including DOD's implementation and industry's views, are included in appendix I.

As authorized by your office, we are sending copies of this letter and appendixes to the Chairman of the House Armed Services Committee, Congressman Charles S. Gubser, the Department of Defense, CODSIA, and the six contractors included in our review. We plan to make no further distribution unless specific requests are received.

Sincerely yours,

ELMER B. STAATS,
*Comptroller General*
*of the United States.*

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APPENDIX I: OBSERVATIONS ON IMPLEMENTATION OF SECTION 203, PUBLIC LAW 91–441, REGARDING PAYMENTS FOR INDEPENDENT RESEARCH AND DEVELOPMENT AND BID AND PROPOSAL COSTS

POTENTIAL MILITARY RELATIONSHIP

We have previously referred in our letter to the lack of criteria in the law for determining potential relationship and the absence of a statement as to what the legal requirement is expected to achieve.

In the absence of a definition or criteria from the Congress, DOD must interpret the intent of the law and establish its own criteria. During the first year that Section 203 was effective, DOD and the military services chose generally not to formalize criteria for determining potential military relationship, preferring to gain experience first. Consequently, the Service representatives responsible for reviewing contractors' IR&D and B&P projects had considerable latitude in determining potential relationship. In February 1972, DOD issued an instruction which states that IR&D projects aimed only at commercial or non-DOD areas of interest are not considered relevant.

We attempted to evaluate the reasonableness of the Service determinations of the

[1] DOD requires that IR&D and B&P costs be burdened, i.e., they are to include not only all direct costs, but also all allocable indirect costs except for general and administrative expenses.

relevancy of IR&D projects included in the proposed plans of six selected companies.[2] These plans formed the basis for the advance agreements for IR&D of the companies. We found a number of projects that are considered by DOD to have potential military relationship although they were undertaken primarily to meet nondefense needs.

For example, a project of one aerospace-oriented company had an objective of developing a conceptual design that would identify new equipment design criteria and provide methods for combining benefits of fresh water recovery with water pollution abatement by the use of distillation equipment. The company said this project would benefit the military services and the Environmental Protection Agency. The company stated that the Navy and Coast Guard were looking for solutions to waste-treatment problems aboard ships.

The DOD evaluator commented that the project had potential military relevancy because of DOD's interest in curbing pollution at military installations and facilities. In view of the Environmental Protection Agency's responsibilities in the water pollution abatement area, it would appear that the potential military relationship of such IR&D projects would be marginal.

Another aerospace-oriented company included in its plans a project concerning a flight-type electrochemical system. The application of this project was to provide (1) advanced life support systems for manned space flights; (2) aircraft oxygen systems, and (3) regenerative fuel cells for manned and unmanned systems. The purpose of the program was to develop design approaches in certain areas and to demonstrate the flight worthiness of those approaches through appropriate environmental tests. It seems to us that this project is directed to matters of greater concern to NASA than DOD.

CODSIA believes that the Congress should consider amending the potential relationship portion of the law to read "potential relationship to the interests of the U.S. Government." It contends that the current law is resulting in contraction of imaginative and innovative research, and it points to the military services' use of the potential military relationship requirement in reducing the costs of IR&D and B&P.

We did not find, however, that contractors' proposed IR&D/B&P programs were being reduced by the military services for nonmilitary related projects. DOD's instructions state that in negotiating advance agreement ceilings consideration will be given to the potential relationship determinations; but in practice the military services have computed ceilings without including the amount of nonrelated projects as a factor. This has been possible because the cost of projects found to be nonrelated has been relatively insignificant.

For example, the ceiling for one of the six contractors included in our review, with a proposed program of $20.5 million, was negotiated at $15.5 million. The total nonrelated projects were only $1.3 million. In view of the nonacceptance by DOD of $5 million of the contractor's program for other reasons, the $1.3 million of nonrelated projects had no effect on the ceiling. For three other contractors no projects were determined to be nonrelated and for the other two the amounts were minor, $1.2 million and $80 thousand.

It seems to us that the only time nonrelated projects would be a factor in reducing costs is when they are so large in dollar volume as to exceed the amount of a contractor's program not accepted by DOD for other reasons. We were informed by a DOD representative that none of the 63 companies negotiating advance agreements in calendar year 1971 had their IR&D ceilings reduced because of work that did not meet the relevancy test.

In view of the lack of effect on contractors' ceilings, we doubt that the potential military relationship requirement in the law has actually caused the serious restrictive impact on industry, the contraction of research, and the stifling effect on National security mentioned by CODSIA. In view of the law's general recognition through the potential military relationship provision that the military services should not be paying for research and development efforts that do not benefit them, we do not believe it should be changed as suggested by CODSIA. We suggest, however, that the Congress consider providing more specific guidance in the law as to what it is intended to achieve. For example, if the intent is to limit DOD's payment for IR&D to work undertaken *primarily* to meet potential military needs, a provision of such nature would be helpful.

NEGOTIATION OF ADVANCE AGREEMENTS

Within the framework of Section 203, DOD has issued regulations which put the burden on the contractors who meet the criteria of the law to come forth and negotiate advance agreements. DOD has further stipulated that no IR&D or B&P costs will be allowable if a company meeting the criteria fails to initiate negotiation prior to the end of the fiscal year for which the agreement is required. We believe this approach should ensure that DOD will negotiate advance agreements with all companies meeting the criteria as required by Section 203.

DELAYS IN NEGOTIATION OF ADVANCE AGREEMENTS

Of 63 companies that negotiated advance agreements with DOD in calendar year 1971, only about 3 percent had completed negotiations prior to cost incurrence, and only about 26 percent were completed by 7 months after the beginning of the contractors' fiscal years. Section 203 requires that advance agreements be negotiated prior to or during the Government's fiscal year covering each contractor's fiscal year beginning on or after the beginning of the Government's fiscal year. This requirement is in conflict with the generally recognized meaning of an advance agreement—that it is made in advance of cost incurrence.

If made in advance of cost incurrence such agreements give the contractor some assurance that its IR&D costs will be recovered and that disputes with Government contracting personnel concerning the reasonableness or allocability of the costs will be minimized or avoided. They also provide a basis for an objective evaluation of projects by the Government, unencumbered by consideration of costs already incurred and the effect disallowance of already incurred costs would have on the contractor. If not made on a timely basis the Government cannot use advance agreements in contract price negotiations. Prior agreements must be used and appropriately adjusted to meet current conditions. In the event of substantial changes, pricing problems could result.

We recognize the difficulties encountered in reaching agreement with a large number of contractors before the beginning of their fiscal year, but believe that all parties would benefit from negotiating prior to cost incurrence. DOD is aware of the problem and is attempting to bring about earlier negotiations of 1972 agreements through requiring earlier submission of proposed programs, better scheduling of technical evaluations, etc. While this does not mean that agreements will be negotiated prior to cost incurrence, the action is in the right direction.

PENALTY FOR FAILURE TO AGREE

Section 203(b) of Public Law 91-441 requires that DOD substantially reduce its expected IR&D and B&P payments to any company with which negotiations are held but no agreement is reached before the end of the contractor's fiscal year.

DOD's instruction provides that when agreement is not reached, DOD will not pay more than 75 percent of the amount which the contracting officer believes the company would be entitled to receive under an advance agreement. The instruction establishes (1) guidelines to contractors for appealing decisions for reduced payments and (2) final appeal hearing groups for each of the departments.

CODSIA believes this requirement in the law has provided the DOD negotiator with too much leverage in the negotiating process because he can unilaterally reduce a contractor's payments when agreement is not reached. No specific examples of such arbitrary actions were cited by CODSIA. CODSIA believes there should be no penalty when reasonable but unsuccessful efforts are made by a contractor to reach agreement.

DOD officials informed us they had reduced the payments of only one contractor because an agreement was not reached. The contractor's appeal was heard but denied. We were told that the contractor is considering the possibility of filing a civil suit.

It is obvious that DOD negotiators could use the penalty provision in the law as a leverage in negotiations, although we have no evidence that this is being done. On the other hand, contractors could also be arbitrary during the negotiations. If advance agreements were actually made in advance of cost incurrence, instead of any time during the contractor's fiscal year, the possibility of harm to the contractor, through actions on the part of the Government contracting officer to reduce the amount of the contractor's program to be supported by DOD would be minimized. The contractor would have an option of not starting certain projects so as to stay within the ceiling negotiated in the advance agreement.

ARBITRARY REDUCTION OF PROPOSED PROGRAMS

CODSIA said that despite extensive technical review and other efforts on the part of DOD to assure that contractors' expenditures are at reasonable levels, well managed, and of high technical quality, some DOD personnel have established an unsupportable criteria of "the same or less than last year." CODSIA is afraid this will result in involuntary cost-sharing on the part of the contractor, and perhaps in contractors refraining from conducting needed IR&D tasks or making appropriate bids. The latter would, CODSIA says, result in weakening our National capabilities and impairing the competitive process.

DOD's instructions state that in negotiating the ceilings for IR&D and B&P to be included in advance agreements particular attention is to be given to technical evaluations of contractors' programs, determinations of potential military relationship, comparison with previous years' programs including the level of the Government's participation, and changes in the company's business activities.

We were unable to ascertain the effect of each of these factors on the ceilings negotiated for the six contractors included in our review because the negotiators' files did not show how the ceiling amounts were determined. However, in discussing the matter with DOD negotiating personnel we concluded that the level of previous years' programs is given substantial weight in determining the Government's prenegotiation position. Considering recent budgetary constraints and congressional concern over costs incurred for IR&D and B&P in prior years,

[2] In view of DOD's determination—with which we agree—that the relevancy of B&P projects could not reasonably be determined except on an after-the-fact basis, rather than on a programmed basis such as IR&D, our review was too early to permit an evaluation of the relevancy of the B&P segment.

it is not surprising that historical cost experience is a basic consideration.

ADJUSTMENT OF NEGOTIATED CEILINGS

CODSIA is concerned about the practice of some DOD negotiators to include a clause in advance agreements which provides DOD with an option to reopen negotiations aimed at downward adjustment in the ceiling when the technical rating[3] is subsequently received at lower than a stipulated value. CODSIA believes that if a higher technical rating is received, the rules should similarly allow an increase in the allowable ceiling.

We analyzed all 146 agreements negotiated with 63 companies in calendar year 1971 and found that 48 provided DOD with the option to reduce ceilings based on subsequent technical reviews. The clause was inserted in all agreements negotiated prior to completion of technical reviews of the contractor's proposed programs. Departmental officials informed us, however, that only one of these 48 agreements was renegotiated because of a subsequent low technical rating.

Although the experience to date does not show that renegotiation of ceilings downward because of low technical ratings is a major problem area, CODSIA's position seems reasonable.

TECHNICAL EVALUATIONS

Section 203(a)(2) requires that the IR&D portions of advance agreements must be based on company-submitted plans on each of which DOD makes a technical evaluation before or during the fiscal year covered by the agreement.

DOD's technical evaluations are of two types. One, which is made annually, consists of a review by technically oriented personnel of the written descriptions of IR&D projects furnished by the companies in their annual plans (brochures). DOD currently requires that at least 90 percent of the dollar value of each company's IR&D program be reviewed in this manner. The descriptions are reviewed with the objective of judging the quality of the projects with respect to such things as technical objectives, approach, past achievements, originality, uniqueness, facilities, personnel, etc.

The second type, which DOD now requires to be made at least once every three years, is referred to as an on-site review. This review complements the annual "brochure review" in that it allows the Government evaluators to see the actual facilities and to discuss projects with company personnel. In contrast to the 90 percent rule for the brochure review, the evaluating team generally has considerable discretion in selecting the numbers and types of projects it will examine during the on-site review.

In view of the time and cost required to make on-site reviews, we believe that after a contractor's program has once been subjected to a thorough on-site review, the annual reliance thereafter on paper (brochure) reviews, augmented periodically with on-site reviews, is a reasonable practice.

DOD'S ANNUAL REPORT TO THE CONGRESS

Section 203(c) requires the Secretary of Defense to submit an annual report concerning IR&D and B&P to the Congress on or before March 15 of each year. We reviewed the report recently submitted, and believe it meets the requirements of the law.

We also made a limited test of the reasonableness of the Defense Contract Audit Agency's (DCAA's) annual statistical report submitted as a part of the Secretary's annual report, because of the report's importance in providing the Congress with visibility of the costs incurred for IR&D and B&P. This test was restricted to the six major contractors included in our review, and included a review of DCAA's method as well as a validation of source data to the extent we deemed necessary.

Although we found minor discrepancies, we believe the DCAA report can be relied on as a gauge of IR&D and B&P activity. We believe, however, that the value of the report could be further enhanced by including payments made to the contractors by other Government agencies. DCAA officials informed us that such payments have not been included because this is not required by Section 203; however, this information is available in DCAA's files. In view of the relatively large sums involved, about $85 million for NASA in 1970, the Congress may wish to consider having DCAA extend its report to include payments by other Government agencies to those contractors receiving payments from DOD.

[3] In making technical evaluations of contractors' IR&D programs DOD evaluators generally assign a numerical rating which in their judgment represents the quality of the programs in relation to predetermined standards.

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COUNCIL OF DEFENSE AND SPACE INDUSTRY ASSOCIATIONS,
*Washington, D.C., January 31, 1972.*

Mr. W. D. LINCICOME,
*Assistant Director, Research and Development, Defense Division, General Accounting Office, Washington, D.C.*

DEAR MR. LINCICOME: This is in response to your letter of December 1, 1971, requesting the views of industry on the implementation by the Department of Defense of the provisions of Section 203 of Public Law 91-441, pertaining to the recognition of Independent Research and Development (IR&D) and Bid and Proposal (B&P) costs.

In November 1970, DoD, acting promptly and responsively to implement Section 203 (passed in October 1970), requested CODSIA to submit comments on the proposed ASPR Regulations which would implement this Section. At the time, we suggested certain changes which were considered necessary to prevent over-implementation or misimplementation of the law.

Even though 14 months have passed since the issuance of Defense Procurement Circular No. 84, sufficient time has not yet elapsed to assess accurately all of the effects of Section 203 and DoD's implementation of that legislation. Implementation problems are still surfacing as DoD procedures continue to be formalized and refined. Fourteen months is not sufficient time for full-cycle including an after-the-fact audit and analysis of results. For this reason, we are addressing a few key issues realizing that additional problems could very well develop in the future.

There is, however, some evidence that potentially harmful effects have emerged. We now see that some aspects of the legislation and DoD's implementations are beginning to stifle technical ingenuity which is critical not only to defense needs but also to social and economic needs.

POTENTIAL RELATIONSHIP

The provision of the legislation which requires that IR&D and B&P have a "potential relationship to a military function or operation" is producing a serious restrictive impact on industry IR&D programs. There appears to be a trend towards recognition of IR&D only when related to present readily identifiable needs with a resulting contraction of imaginative, innovative research. We sincerely doubt that this was the result the Congress had in mind at the time the legislation was enacted. For example, at one time even the Space Shuttle Program was ruled to have no potential military relationship, though this ruling was subsequently changed.

Congressional Hearings held in early 1970 and subsequent Committee reports issued as a result of those Hearings do make it clear that the Congress desired improvement in administration of IR&D and B&P by the DoD and identification of the amounts allocated by DoD for IR&D and B&P. On the other hand, it appears clear from the Hearings and Committee Reports that Congress recognized the importance of industry funded research and development effort to the national security. Unfortunately, experience shows that some elements of the DoD and the military services are laboring under the impression that Congress has mandated that IR&D and B&P costs be continually reduced regardless of the national priorities. With this "mandate" in mind, the "test of potential relationship" offers one means of accomplishing such reductions.

In addition to the stifling effect of DoD's interpretation of the "test of potential relationship" on the national security, the law has an even greater impact on other priority national goals such as ecology, transportation, medicine, housing, and urban problems. The contributions of technology to national strength and a better society are recognized by other nations, both friend and foe. This recognition is evidenced both in the national budgets and in subsidies to support industry research and development. At a time when there is a need for realization that only through technological advance can we hope to maintain national security and continue economic and social progress, we find an anomally in legislation, whether intended or not, which seriously impedes industry research and development.

We therefore, submit that narrow interpretation of the regulations and the statute with respect to "potential relationship" is only the evidence of the problem rather than its root.

As an immediate correction of what we consider to be a most serious and damaging legislative anomaly, Congress should consider amending the potential relationship portion of the law to read "potential relationship to the interests of the U.S. Government" in order to permit and encourage recognition of industry's independent technical effort benefiting all branches of the Federal Government. In addition, such action would support the continuing encouragement by Congressional leaders for utilization of defense technology in solving non-defense problems.

PENALTY FOR FAILURE TO AGREE

Section 203, P.L. 91-441, provides that a contractor who fails to conclude an advance agreement shall by the end of the pertinent fiscal year receive "substantially less" than he would otherwise be paid. Although to date, only a few contractors to our knowledge have been confronted with such a determination, all are threatened with this possibility. This provision creates an imbalance in the negotiating process as it gives the DoD negotiator an inequitable leverage in negotiations since, failing agreement, he must make an unilateral determination for a significantly reduced recoverable ceiling. Such authority effectively destroys the concept of bilateral negotiation and unavoidably leads to forcing of agreements that may well be detrimental to both the government's and industry's best interests. It may not be unreasonable for the few to impose a penalty on a contractor who refuses to enter into negotiations looking toward an advance agreement. However, there should be no penalty when a contractor makes reasonable efforts to negotiate an agreement, but is unable to reach an agreement by the end of the pertinent fiscal year.

ARBITRARY REDUCTION OF CONTRACTOR'S PROPOSED I.R. & D. AND B. & P. PROGRAMS

With the leverage afforded the DoD negotiator as discussed under "Penalty For Failure to Agree", it is observed that despite extensive technical review and control and reporting techniques being directed at contractor's IR&D/B&P programs by the DoD to assure that contractor expenditures are at reasonable levels, well managed, and of high technical quality, some DoD personnel have established an unsupportable criteria of "the same or less than last year." It is obvious that the opportunities for and requirements of individual contractors, as well as the Government, will vary from year to year. Unless some valid judgments are made in recognition of these needs, the result will be that contractors will incur essential but non-recoverable costs, the end result of which is involuntary cost sharing not intended by the legislation or by DoD policy. The only alternative is to refrain from conducting certain IR&D tasks and from making otherwise appropriate bids with the resultant weakening of our national capabilities and impairment of the competitive process.

ADJUSTMENT OF NEGOTIATED CEILINGS

Some DoD negotiators are now requiring in current advance agreements, a clause which makes mandatory consideration of a downward adjustment only to otherwise allowable IR&D/B&P expense ceilings when the Government's technical grading is subsequently received at lower than a stipulated value. We believe that if a higher technical grade is received, the rules should similarly allow an increase in the allowable ceiling. It is our view that the "downward" philosophy in neither a reasonable nor an equitable business arrangement.

INCONSISTENCIES BETWEEN SECTION 203, PUBLIC LAW 91–441, AND DOD IMPLEMENTATIONS, DPC 84 AND DPC 90

Defense Procurement Circular 90 provides that advance agreements must be negotiated with any company which received payments, either as a prime contractor or *subcontractor*, in excess of $2 million from the DoD for IR&D *and* B&P in a fiscal year while the act provides $2 million in IR&D *or* B&P payments in the prior year and is silent as to subcontracts.

DPC 90 provides that companies which meet the $2 million criterion must negotiate advance agreements either at the corporate level or at the profit center level for those profit centers which contract directly with DoD and which in the preceding year allocated recoverable IR&D *and* B&P costs in excess of $250,000 to all DoD contracts and *subcontracts*. DPC 90 correctly provides that in the computation to determine whether the $2 million or $250,000 threshold was reached, only contracts for which the submission and certification of cost or pricing data was required shall be included. However, the changing of "or" to "and" as well as the inclusion of "subcontracts" (and burdening) results in the negotiation of many more agreements than the language of the statute requires. To give a specific example, a medium size company has advised that these changes in language have caused it to have to submit brochures, go through a two day technical review with 18 government representatives, and to negotiate advance agreements for two profit centers of the company where the applicable DoD billings were less 10% of the total profit billings in each case. In one of the profit centers 1500 man hours were expended and in the other 3500 man hours, all of which would have been unnecessary had DPC 90 followed the letter of the law and not enlarged upon it.

As indicated at the beginning of our letter, CODSIA appreciates the opportunity afforded to comment upon Section 203, P.L. 91–441 and its implementation, because this is a matter of great importance to the vitality and future of our country. We appreciate also your indication that this letter will be made a part of the GAO Report to the Senate Committee on Armed Services.

CODSIA representatives will be available to discuss and clarify any of the subject matters discussed in this letter.

Very truly yours,

JEAN A. CAFFIAUX,
*Staff Vice President, Electronic Industries Association.*

ROBERT E. LEE,
*President, National Aerospace Services Association.*

GEORGE E. LAWRENCE,
*Executive Vice President, Scientific Apparatus Makers Association.*

KARL G. HARR, Jr.,
*President, Aerospace Industries Association.*

JOSEPH M. LYLE,
*President, National Security Industrial Association.*

EDWIN M. HOOD,
*President, Shipbuilders Council of America.*

JOHN C. BECKETT,
*WEMA.*

JAMES G. ELLIS,
*Manager, Defense Liaison Department, Automobile Manufacturers Association.*

Mr. McINTYRE. Mr. President, I have introduced a substantial volume of information for the Record which will be available for the convenience of the Senate. However, in the interest of brevity, I will summarize the significance and highlights of their contents.

First, to summarize the financial data reported by the Department of Defense, the amount of payments to contractors for I.R. & D. and B. & P., and including OTE for comparability, as reported a year ago was $754 million for 1969, $695 million for 1970, and $625 million estimated for 1971 and for 1972. The current report reflects actual data for 1970 which totals $714 million. This is $19 million above the amount estimated but still $40 million less than 1969. The current estimate for 1971 is $673 million which is substantially above the $625 million previously estimated but still $41 million less than the actual costs for 1970. The current estimate for 1972, as provided informally by the Department of Defense, is that it will be within a few percentage points of the amount for 1971. The significance of all of these amounts is that even with some upward adjustment from estimates made a year ago, they continue to reflect a declining trend from earlier years.

Secondly, and perhaps even more important than the decline in dollars, is the effectiveness of the actions taken by the Department of Defense during the past year to bring an increasing number of eligible contractors into compliance with section 203 including the requirements for advance agreements, for technical brochures, and for relevancy to military function or operation. For example, the number of advance agreements negotiated covering I.R. & D. and B. & P. totaled 62 for 1970 and increased to 126 for 1971. Another dramatic improvement is represented by a comparison of total I.R. & D. and B. & P. costs incurred by DOD with advance agreements and without advance agreements. For 1970, $246 million or 37 percent of such costs were without an advance agreement. For 1971 this declined to $18 million or 3 percent.

Turning to the Comptroller General report, a number of significant points made are worthy of mention:

First. Because DOD implementation had not been completed when the GAO review was made, it is still too early to make a conclusive evaluation of either the actions taken or the effects of the provisions of section 203.

Second. Certain provisions of section 203 are not sufficiently clear to enable proper evaluations of effect.

Third. DOD has been reasonably diligent, and with certain possible exceptions covered in the GAO report, the provisions of the law are being implemented.

Fourth. The Department of Defense annual report submitted under section 203(c) has been reviewed and is believed to meet the requirements of the law.

Fifth. Although minor discrepancies were found in the Defense Contract Audit Agency's annual statistical report, GAO believes the report can be relied on as a gage of I.R. & D. and B. & P. activity.

Sixth. GAO plans to continue monitoring DOD administration of I.R. & D. and B. & P. efforts.

Dr. John Foster, the Director of Defense Research and Engineering, recently appeared before the Armed Services Committee in support of the fiscal year 1973 military procurement authorization request and made the following statements in response to questions on section 203:

First. The I.R. & D. technical plans submitted by contractors have been improving.

Second. There has been only one case that had to go to an appeals board because an advance agreement could not be reached between DOD and the contractor. Final resolution is pending.

Third. The requirement to determine the potential relationship of I.R. & D. and B. & P. projects to military functions or operations is causing problems.

Fourth. The submittal of an annual report to the Congress on or before March 15 of each year is not causing any serious problems with respect to collection of the information to be furnished.

Fifth. The I.R. & D. effort plays a vital role in ensuring that this Nation maintains an adequate technological base.

Sixth. At this point in time, it would appear that industry is generally satisfied with the current approach to I.R. & D. We have had no major complaints except for the question of relevancy.

Mr. President, in my opinion the Department of Defense is doing a commendable job of implementing the provisions of section 203. The documents which I have provided for the record attest to the extensive efforts which have been made to establish and place in operation the required organization and procedures. DOD has even gone beyond the letter of the law by creating a centralized

data bank in the Department of Defense which makes knowledge of contractor I.R. & D. efforts available to major Defense organizations. At the same time, Mr. President, it is generally agreed that this program is still in a shakedown period and requires more time to achieve a high degree of efficiency.

The problems which have been encountered, as reported by Defense, by GAO, and by industry bear additional study as the provisions of section 203 are further implemented. I intend to continue to employ the GAO to assist in this process and to seek solutions to these and any other new problems which may arise as experience is gained.

I will continue to monitor the performance of the Department of Defense to insure effective compliance with the provisions of section 203, and to report to the Senate as appropriate.

## TO WHAT END—PART III

Mr. HART. Mr. President, I have refrained from making a formal comment on the President's decision to blockade North Vietnam with the hope, foolish perhaps, that with the passage of several days the policy would look different than described.

There was the hope that the script had already been written and a satisfactory ending already agreed to by the players.

There was uncertainty as to the extent of the blockade and as to what type of cease-fire the President seeks in return for the release of our prisoners and withdrawal of our troops.

Unhappily, it now appears that indeed there is no script and that the author of this latest act in the continuing tragedy of Vietnam has left it to others to write the outcome.

Unhappily, where on Monday night the President spoke principally of mining and bombing railway lines—grevious enough steps in their own right—we are now told this Nation may be prepared to take direct action against ships unloading in North Vietnam.

It has been reported that already we have bombed to within 60 miles of the Chinese border.

And finally, there has been no statement clarifying our cease-fire offer, statements which might encourage Hanoi leaders to forget past experiences with international agreements and to accept our offer.

Certainly, I hope Moscow reacts coolly.

Certainly, I hope Hanoi accepts.

In the meantime, we have returned to the brink.

We have sought out and set up a confrontation with the Soviet Union and possibly with Red China, and we have done so in a way which has taken control of the situation out of our hands and leaves us only with the hope that the other players will react with restraint and wisdom. That is the grimly ironic result of our attempt to prove that a great power can and must control events even in a land distant from its sphere of influence.

But hope is a thin reed to rely on when standing on the brink in the nuclear age.

So it is that I find myself returning to the question which will not go away—the question which will haunt us long after the shooting ends in Southeast Asia:

To what end?

What end do we seek in Vietnam that morally justifies the destruction of life and property resulting from our policies?

That was the question I asked after the President last month announced a resumption and escalation of bombing attacks on North Vietnam, and that is a question we must ask again today. What outcome of the war in Vietnam justifies a confrontation with China and Russia and still another escalation in bombing?

Bombing close to the China border will not improve relations with Peking, relations which are more important to world peace than who happens to rule in Saigon.

Attacking Soviet ships and planes will do little to convince hardliners in Moscow of the value of negotiations with the United States, and the outcome of the SALT talks are more important to world peace than who happens to rule in Saigon.

Remembering the awful destruction already borne by the people of Southeast Asia, what end do we seek which justifies still more of the same?

Even more importantly, we must ask ourselves whether the return to the brink is necessary to achieve the President's goals.

We must ask that question even if luck is with us and those goals are achieved as a result of the President's newest moves.

We must ask that because there is a fatal flaw in a policy of brinkmanship in a nuclear age—no matter how many times it succeeds, it only has to fail once.

To risk a major power confrontation over the question of who rules in Saigon is insane.

To risk a major power confrontation to gain what could be achieved without confrontation is insane.

The President said he is willing to withdraw all U.S. forces within 4 months in return for a cease-fire and return of our men held prisoners.

We can, I believe, achieve an end to U.S. involvement without marching to the brink, without an escalation of violence.

I, no less than the President, will be thankful if his latest plan succeeds.

But even if it does, must we still not ask if what was achieved justifies the costs and the risks?

Those who believe that the brink should be approached rarely, if ever; those who believe that a nation should wage war only for reasons vital to national security, and those who believe that the risks involved in this Nation's current policy outweigh any end which can be achieved should do what they can to change that policy.

For that reason, I voted in the conference of Democratic Senators to disapprove the escalation and to support the Church-Case amendment to cut off war funds 4 months after agreement has been reached on return of our men held prisoners.

Mr. President, columnist Joseph Kraft, in a piece entitled "Figleaf for Defeat," discussed how this Nation arrived at the newest Vietnam crisis. I ask unanimous consent that this column be printed in the RECORD.

There being no objection, the article was ordered to be printed in the RECORD, as follows:

### FIGLEAF FOR DEFEAT

(By Joseph Kraft)

President Nixon is risking almost everything to gain practically nothing. This is the distinguishing feature of the present Vietnam crisis.

Maybe he will luck out, and I certainly hope so. But even if he does, there has to be a deep question of confidence in a leader who has so unnecessarily guided the greatest power in the world to such a pathetic position.

To see how little Mr. Nixon stands to gain it is only necessary to look at the terms offered the other side in his latest TV address. In return for a cease-fire and the release of American prisoners, he offers, within four months, to pull out of Vietnam all American troops and installations.

The meaning of that offer has been spelled out in further detail to, among others, Soviet diplomats in Washington. It has been indicated that the withdrawal would mean a cessation of sea and air operations—that is a total suspension of all American military activities in South Vietnam. It has also been indicated that this country would not be surprised if the North Vietnamese broke the cease-fire after the American withdrawal.

That, in effect, is the whole ball game. The other side is being asked to afford Mr. Nixon a respite to pull out troops and get back the prisoners. Then the Communists would be free to go to work on the Saigon regime, with the virtual certainty of taking over South Vietnam.

Mr. Nixon did not come to that offer by any carefully calculated line of deliberate policy. It was not his "plan" when he came to office. Nor when he invaded Cambodia in 1970; nor during the Laos incursion of 1971.

It was not in his mind only three months ago when he said, in the State of the World message, that: "Vietnam no longer distracts our attention from the fundamental issues of global diplomacy or diverts our energies from priorities at home."

On the contrary, Mr. Nixon was forced to make the present offer by the North Vietnamese offensive. The incapacity of 1½ million South Vietnamese soldiers to protect 60,000 Americans against 100,000 North Vietnamese brought the President face to face with defeat in a war which he assured the country was practically over.

As a figleaf to hide defeat, he put forward the latest offer. And to buttress the offer, to make it seem little better than a mere panicky surrender, he accompanied it with the decision to seal off North Vietnam by mining harbors and cutting rail lines.

The cost of that face-saving exercise is bound to be very high. American airmen are likely to suffer heavy casualties as they hit the rail links with China. Hundreds of Vietnamese will be killed.

Moreover, the tone the President felt obliged to take to conceal panic is perfectly calculated to put off the North Vietnamese leaders. Mr. Nixon did, after all, issue a kind of ultimatum.

But the men in Hanoi—mindful of their weakness as a country and deeply aware of how the Great Powers diddled them in 1946 and 1954—are paranoic about negotiating under threat. At the very least, they are going to go on with their offensive against Hue. Thousands of Vietnamese will be killed in the process.

As a final cost, the sealing off of North Vietnam, necessarily engages Russia and China. The danger of big power confronta-

tion can be probably put aside as rhetoric dear to senators. Moscow and Peking have available many ways short of direct challenge to erode and infiltrate Mr. Nixon's quarantine of North Vietnam.

But President Nixon's action does put in hazard the summit meeting with the Russians. It casts a shadow over the arms control and German agreements connected with the Moscow summit. And it washes out the rapport Mr. Nixon established with the Chinese leaders in what he called "the week that changed the world."

Because the offer the President is now extending is so favorable to the other side, there is a chance Moscow can induce Hanoi to negotiate. But no "fix" has been put in between Washington and Moscow. It is still touch and go, and the risks the President has already taken to cover the failure of his policy add up to a staggering total.

Mr. Nixon has put up for grabs the structure of world order, and the lives of thousands of Vietnamese and hundreds of Americans. The best he can get in return is only the figleaf for defeat he could have had all along. Every responsible citizen will want to think hard before according confidence to that performance.

## CONCLUSION OF MORNING BUSINESS

The ACTING PRESIDENT pro tempore. Is there further morning business? If not, morning business is closed.

## NATIONAL AERONAUTICS AND SPACE ADMINISTRATION AUTHORIZATION, 1973

The ACTING PRESIDENT pro tempore. Under the previous order, the unfinished business, S. 3526, is temporarily laid aside, and the Chair lays before the Senate H.R. 14070, the NASA authorization bill, which will be stated by title.

The assistant legislative clerk read as follows:

A bill (H.R. 14070) to authorize appropriations to the National Aeronautics and Space Administration for research and development, construction of facilities, and research and program management, and for other purposes.

The Senate proceeded to consider the bill, which had been reported from the Committee on Aeronautical and Space Sciences with an amendment to strike out all after the enacting clause and insert:

That there is hereby authorized to be appropriated to the National Aeronautics and Space Administration:

(a) For "Research and development," for the following programs:

(1) Apollo, $128,700,000;

(2) Space flight operations, $1,094,200,000;

(3) Advanced missions, $1,500,000;

(4) Physics and astronomy, $156,600,000;

(5) Lunar and planetary exploration, $321,200,000;

(6) Launch vehicle procurement, $191,600,000;

(7) Space applications, $207,200,000;

(8) Aeronautical research and technology, $163,440,000;

(9) Space research and technology, $64,760,000;

(10) Nuclear power and propulsion, $21,100,000;

(11) Tracking and data acquisition, $259,100,000;

(12) Technology utilization, $4,000,000.

(b) For "Construction of facilities," including land acquisitions, as follows:

(1) Rehabilitation and modification of aeronautical airborne science, and support facilities, Ames Research Center, $1,065,000;

(2) Rehabilitation of Unitary Plan wind tunnel model supports, control systems, and model preparation areas, Ames Research Center, $760,000;

(3) Rehabilitation and modification of utility systems, Goddard Space Flight Center, $590,000;

(4) Rehabilitation and modification of roadway system, Jet Propulsion Laboratory, $610,000;

(5) Modifications of, and additions to, spacecraft assembly facilities, Kennedy Space Center, $8,100,000;

(6) Modification of Titan Centaur facilities, Kennedy Space Center, $2,040,000;

(7) Rehabilitation of full-scale wind tunnel, Langley Research Center, $2,465,000;

(8) Modification of central air supply system, Langley Research Center, $1,175,000;

(9) Environmental modifications for utility operations, Langley Research Center, $650,000;

(10) Modification of high temperature and high pressure turbine and combustor research facility, Lewis Research Center, $9,710,000;

(11) Modification of fire protection system, Manned Spacecraft Center, $585,000;

(12) Warehouse replacement, Wallops Station, $350,000;

(13) Space shuttle facilities, as follows:

(A) Modification of Altitude Test Facilities, Arnold Engineering Development Center, $6,800,000,

(B) Rehabilitation of Propellant and High Pressure Gaseous Systems, Mississippi Test Facility, $1,160,000,

(C) Modification of the Entry Structures Facility, Langley Research Center, $1,635,000,

(D) Addition for Systems Integration and Mockup Laboratory, Manned Spacecraft Center, $2,545,000,

(E) Modification of the Vibration and Acoustic Test Facility, Manned Spacecraft Center, $2,770,000,

(F) Modification of the Structures and Mechanics Laboratory, Marshall Space Flight Center, $4,700,000,

(G) Addition for Electrical Power Laboratory, Marshall Space Flight Center, $320,000,

(H) Modification of Acoustic Model Engine Test Facility, Marshall Space Flight Center, $2,430,000,

(I) Modification of Manufacturing and Final Assembly Facilities, Undesignated Locations, $5,540,000;

(14) Rehabilitation and modification of facilities at various locations, not in excess of $500,000 per project, $11,580,000;

(15) Minor construction of new facilities and additions to existing facilities at various locations, not in excess of $250,000 per project, $1,720,000;

(16) Facility planning and design not otherwise provided for, $8,000,000.

(c) For "Research and program management," $729,450,000, of which not to exceed $572,237,000 to be available for personnel and related costs.

(d) Notwithstanding the provisions of subsection 1(g), appropriations for "Research and development" may be used (1) for any items of a capital nature (other than acquisition of land) which may be required at locations other than installations of the Administration for the performance of research and development contracts, and (2) for grants to nonprofit institutions of higher education, or to nonprofit organizations whose primary purpose is the conduct of scientific research, for purchase or construction of additional research facilities; and title to such facilities shall be vested in the United States unless the Administrator determines that the national program of aeronautical and space activities will best be served by vesting title in any such grantee institution or organization. Each such grant shall be made under such conditions as the Administrator shall determine to be required to insure that the United States will receive therefrom benefit adequate to justify the making of that grant. None of the funds appropriated for "Research and development" pursuant to this Act may be used in accordance with this subsection for the construction of any major facility, the estimated cost of which, including collateral equipment, exceeds $250,000, unless the Administrator or his designee has notified the Speaker of the House of Representatives and the President of the Senate and the Committee on Science and Astronautics of the House of Representatives and the Committee on Aeronautical and Space Sciences of the Senate of the nature, location, and estimated cost of such facility.

(e) When so specified in an appropriation Act, (1) any amount appropriated for "Research and development" or for "Construction of facilities" may remain available without fiscal year limitation, and (2) maintenance and operation of facilities, and support services contracts may be entered into under the "Research and program management" appropriation for periods not in excess of twelve months begining at any time during the fiscal year.

(f) Appropriations made pursuant to subsection 1(c) may be used, but not to exceed $35,000, for scientific consultations or extraordinary expenses upon the approval or authority of the Administrator and his determination shall be final and conclusive upon the accounting officers of the Government.

(g) Of the funds appropriated pursuant to subsections 1(a) and 1(c), not in excess of $10,000 for each project, including collateral equipment, may be used for construction of new facilities and additions to existing facilities, and not in excess of $25,000 for each project, including collateral equipment, may be used for rehabilitation or modification of facilities: *Provided*, That of the funds appropriated pursuant to subsection 1(a), not in excess of $250,000 for each project, including collateral equipment, may be used for any of the foregoing for unforeseen programmatic needs.

(h) No part of the funds appropriated pursuant to subsection (a) of this section may be used for grants to any nonprofit institution of higher learning unless the Administrator or his designee determines at the time of the grant that recruiting personnel of any of the Armed Forces of the United States are not being barred from the premises or property of such institution except that this subsection shall not apply if the Administrator or his designee determines that the grant is a continuation or renewal of a previous grant to such institution which is likely to make a significant contribution to the aeronautical and space activities of the United States. The Secretary of Defense shall furnish to the Administrator or his designee within sixty days after the date of enactment of this Act and each January 30 and June 30 thereafter the names of any nonprofit institutions of higher learning which the Secretary of Defense determines on the date of each such report are barring such recruiting personnel from premises or property of any such institution.

SEC. 2. Authorization is hereby granted whereby any of the amounts prescribed in paragraphs (1) through (15), inclusive, of subsection 1(b) may, in the discretion of the Administrator of the National Aeronautics and Space Administration, be varied upward 5 per centum to meet unusual cost variations, but the total cost of all work authorized under such paragraphs shall not exceed the total of the amounts specified in such paragraphs.

SEC. 3. Not to exceed one-half of 1 per centum of the funds appropriated pursuant

to subsection 1(a) hereof may be transferred to the "Construction of facilities" appropriation, and, when so transferred, together with $10,000,000 of the funds appropriated pursuant to subsection 1(b) hereof (other than funds appropriated pursuant to paragraph (16) of such subsection) shall be available for expenditure to construct, expand, or modify laboratories and other installations at any location (including locations specified in subsection 1(b)), if (1) the Administrator determines such action to be necessary because of changes in the national program of aeronautical and space activities or new scientific or engineering developments, and (2) he determines that deferral of such action until the enactment of the next authorization Act would be inconsistent with the interest of the Nation in aeronautical and space activities. The funds so made available may be expended to acquire, construct, convert, rehabilitate, or install permanent or temporary public works, including land acquisition, site preparation, appurtenances, utilities, and equipment. No portion of such sums may be obligated for expenditure or expended to construct, expand, or modify laboratories and other installations unless (A) a period of thirty days has passed after the Administrator or his designee has transmitted to the Speaker of the House of Representatives and to the President of the Senate and to the Committee on Science and Astronautics of the House of Representatives and to the Committee on Aeronautical and Space Sciences of the Senate a written report containing a full and complete statement concerning (1) the nature of such construction, expansion, or modification, (2) the cost thereof including the cost of any real estate action pertaining thereto, and (3) the reason why such construction, expansion, or modification is necessary in the national interest, or (B) each such committee before the expiration of such period has transmitted to the Administrator written notice to the effect that such committee has no objection to the proposed action.

SEC. 4. (a) Notwithstanding any other provision of this Act—

(1) no amount appropriated pursuant to this Act may be used for any program deleted by the Congress from requests as originally made to either the House Committee on Science and Astronautics or the Senate Committee on Aeronautical and Space Sciences,

(2) no amount appropriated pursuant to this Act may be used for any program in excess of the amount actually authorized for that particular program by sections 1(a) and 1(c), and

(3) no amount appropriated pursuant to this Act may be used for any program which has not been presented to or requested of either such committee,

unless (A) a period of thirty days has passed after the receipt by the Speaker of the House of Representatives and the President of the Senate and each such committee of notice given by the Administrator or his designee containing a full and complete statement of the action proposed to be taken and the facts and circumstances relied upon in support of such proposed action, or (B) each such committee before the expiration of such period has transmitted to the Administrator written notice to the effect that such committee has no objection to the proposed action.

(b) Nothing in this section shall be construed to authorize the expenditure of amounts for personnel and related costs pursuant to section 1(c) to exceed amounts authorized for such costs.

SEC. 5. It is the sense of the Congress that it is in the national interest that consideration be given to geographical distribution of Federal research funds whenever feasible, and that the National Aeronautics and Space Administration should explore ways and means of distributing its research and development funds whenever feasible.

SEC. 6. (a) If an institution of higher education determines, after affording notice and opportunity for hearing to an individual attending, or employed by, such institution, that such individual has been convicted by any court of record of any crime which was committed after the date of enactment of this Act and which involved the use of (or assistance to others in the use of) force, disruption, or the seizure of property under control of any institution of higher education to prevent officials or students in such institution from engaging in their duties of pursuing their studies, and that such crime was of a serious nature and contributed to a substantial disruption of the administration of the institution with respect to which such crime was committed, then the institution which such individual attends, or is employed by, shall deny for a period of two years any further payment to, or for the direct benefit of, such individual under any of the programs authorized by the National Aeronautics and Space Act of 1958, the funds for which are authorized pursuant to this Act. If an institution denies an individual assistance under the authority of the preceding sentence of this subsection, then any institution which such individual subsequently attends shall deny for the remainder of the two-year period any further payment to, or for the direct benefit of, such individual under any of the programs authorized by the National Aeronautics and Space Act of 1958, the funds for which are authorized pursuant to this Act.

(b) If an institution of higher education determines, after affording notice and opportunity for hearing to an individual attending, or employed by, such institution, that such individual has willfully refused to obey a lawful regulation or order of such institution after the date of enactment of this Act, and that such refusal was of a serious nature and contributed to a substantial disruption of the administration of such institution, then such institution shall deny, for a period of two years, any further payment to, or for the direct benefit of, such individual under any of the programs authorized by the National Aeronautics and Space Act of 1958, the funds for which are authorized pursuant to this Act.

(c)(1) Nothing in this Act shall be construed to prohibit any institution of higher education from refusing to award, continue, or extend any financial assistance under any such Act to any individual because of any misconduct which in its judgment bears adversely on his fitness for such assistance.

(2) Nothing in this section shall be construed as limiting or prejudicing the rights and prerogatives of any institution of higher education to institute and carry out an independent, disciplinary proceeding pursuant to existing authority, practice, and law.

(3) Nothing in this section shall be construed to limit the freedom of any student to verbal expressions of individual views or opinions.

SEC. 7. This Act may be cited as the "National Aeronautics and Space Administration Authorization Act, 1973."

The ACTING PRESIDENT pro tempore. Debate on this bill is under a time limitation of 2 hours, and 1 hour on any amendment, with the exception of an amendment by the Senator from Massachusetts (Mr. BROOKE), on which there is a limitation of 2 hours, and an amendment by the Senator from Minnesota (Mr. MONDALE), on which there is a limitation of 3 hours, and 30 minutes on any amendment to an amendment, debatable motion, or appeal.

Who yields time?

PRIVILEGE OF THE FLOOR

Mr. CANNON. Mr. President, I ask unanimous consent that the chief counsel of the committee, Mr. James J. Gehrig, be permitted the privilege of the floor.

The ACTING PRESIDENT pro tempore. Without objection, it is so ordered.

Mr. CANNON. I yield myself 30 minutes.

Mr. President, we have before the Senate H.R. 14070, to authorize appropriations to the National Aeronautics and Space Administration for fiscal year 1973 for research development, construction of facilities, research and program management, and for other purposes.

At this time I should like to compliment the distinguished chairman of the committee, the senior Senator from New Mexico (Mr. ANDERSON), for his most able leadership in guiding the committee during the hearings and its deliberations on this bill. I also commend the committee's ranking minority member, the Senator from Nebraska (Mr. CURTIS), for his fine assistance and support to the chairman during the committee's work on this authorization bill.

This is the 15th annual budget of the National Aeronautics and Space Administration. The initial authorization request for fiscal year 1973 was $3,379,000,000, of which $2,600,900,000 was for research and development, $77,300,000 was for construction of facilities, and $700,800,000 was for research and program management. However, a budget amendment was submitted on March 20, 1972, increasing the research and program management request by $28,650,000 to accommodate the fiscal year 1973 impact of the Federal pay increase which was effective January 1, 1972. Therefore, the amended request reviewed by the committee was $3,407,650,000.

The committee is recommending $3,420,150,000 for NASA for fiscal year 1973, an increase of $12.5 million above the amended request. The House approved $3,428,950,000 in its action on H.R. 14070, an amount $8.8 million above that recommended by your committee. However, the House did not act upon the pay increase amendment and, therefore, excluding the effect of the pay raise the House bill actually exceeds the recommendations of your committee by $37,450,000.

The authorization recommended for fiscal year 1973, $3,420,150,000, is $35,915,000 above the authorization for fiscal year 1972 which essentially continues the same reduced level of operation for this Agency established 2 years ago. Most significant, however, is that testimony before the committee makes it clear that NASA management has made a critical examination of its plans and programs, not only for fiscal year 1973, but for the impact which these programs will have upon subsequent years funding requirements. The Administrator has stated that the Agency is prepared to conduct its operations for the next several years at

about the level recommended in this bill. This does not mean that the program has become stagnant. Rather, it is indicative of realistic planning so that projects initiated as a part of a balanced and viable space and aeronautics program have a reasonable chance of being funded to completion and that as current projects are completed there will be an opportunity for some new starts. In addition, this policy will maintain a base from which ongoing programs can be accelerated or new programs initiated if such actions are desired in the national interest. This long-range program is in contrast to last year when there was concern that some programs being recommended by NASA might result in unacceptably large annual peak funding requirements, or the undesirable alternatives of severe program imbalance, uneconomical cutbacks or cancellation of approved projects. The funding estimates for the immediate future are presented on page 90 of the report accompanying this bill.

RESEARCH AND DEVELOPMENT

H.R. 14070 contains 12 research and development programs totaling $2,613,400,000. These programs support manned and unmanned space flight projects, space science and technology experiments, launch vehicle development, space applications, aeronautical and space research and technology tasks, and auxiliary activities such as spacecraft tracking and data acquisition. The recommendation of $2,613,400,000 for research and development is $12.5 million above the NASA budget request; $37,450,000 below the House bill for this appropriation category. I will discuss these differences as I proceed with my summary of the bill.

Your committee is recommending $128,700,000 for the Apollo program for fiscal year 1973. For all practical purposes this will conclude the funding for this highly successful manned space flight endeavor. As you know, Mr. President, the Nation has accomplished five successful lunar landing missions, the latest, Apollo 16, being completed on April 27. The Apollo 16 astronauts spent some 20 hours on lunar surface exploration activities and returned with about 215 pounds of lunar surface sample material, the largest returned to date. There is one remaining mission, Apollo 17, scheduled to be flown in December of this year, and this will conclude our lunar exploration activities for the foreseeable future.

The second research and development program in this bill, space flight operations, is recommended at the level of the NASA budget request, $1,094,200,000. This includes $540,500,000 for the Skylab flight project, $200 million for the fiscal year 1973 increment for the space shuttle development, $305,200,000 for funding those activities directly associated with maintaining the capability to launch the Saturn V and Saturn IB launch vehicles and support the Apollo spacecraft, the lunar module, and the Skylab missions, $25,500,000 for studies of space life sciences, and $23 million for studies related to space systems and payloads. Current studies on a space station initiated in prior years will be completed and no further work on this item is contemplated at this time. The Skylab is the Nation's first earth orbital laboratory and is now scheduled for launch by a Saturn V launch vehicle in April 1973. The launch of the laboratory will be followed by three visits by three-man astronaut teams launched with the Saturn IB launch vehicle in Apollo spacecraft. The initial visit is scheduled at 28 days with the following visits to be extended to 56 days each. This project is designed to conducting a variety of experiments involving solar astronomy, earth resources measurements, and biomedical engineering.

The space shuttle, for which $200 million is recommended in fiscal year 1973, has been discussed extensively in conjunction with the two previous NASA authorization requests. This project involves the development of a reusable earth orbital transportation system designed to reduce substantially the cost of space flight operations and provide a great deal of flexibility in these operations which is not now possible with the current family of expendable launch vehicles. Following extensive conceptual, feasibility, technical and cost trade-off studies, and a statement by the President on January 5, 1972, announcing his approval of this undertaking, NASA recently announced the selection of the configuration for development. This consists of a twin solid rocket motor booster which will be recovered after the boost stage burnout, refurbished and reused, and a reusable orbital vehicle, with a separate expendable $H_2/O_2$ fuel tank, which will be returned to earth and reused for up to 100 flights. This configuration is quite different from the fully reusable two-stage system, incorporating a flyback booster, which had received a great deal of study at the time we presented the bill last year. However, it was determined that the fully reusable configuration, particularly the flyback booster, involved extremely high research and development costs and a higher degree of technical risk which might result in cost overruns to solve the technical problems encountered during development. The selected configuration is estimated to cost $5.15 billion through the research, development, test and evaluation phase including the first manned orbital test flight in 1978. This cost estimate is less than half of the estimated cost of the fully reusable system. The economics of this decision, as well as the economics of the shuttle itself, have been studied by the economic analysis firm of Mathematica, Inc., and these studies show conclusively that this is an economically worthwhile project. A summary of the findings of Mathematica, Inc., is included in the hearings on the bill. Aside from the economic aspect, I believe that the significant factor involved here is that the development of this system will place the Nation in a leadership role in space in the future and in so doing will provide a focus for the continuing development of our national technological base which is essential to maintaining our highly productive society.

Mr. President, I may add that I have prepared a table which will be set up in the back of the Chamber, for Senators to examine. It shows the cost and the favorable economic balance from use of the space shuttle with respect to programs projected for the future.

I have just mentioned that the space shuttle is designed to provide an economical and flexible launch vehicle system for space operations in the future. I should like to emphasize that this capability applies not only to NASA, but to the Department of Defense and the commercial users such as the Communications Satellite Corp., and other private ventures which may require transportation services as space opportunities are exploited. The committee has been very much impressed with the coordination between the NASA and the Department of Defense in the development of the shuttle configuration to assure that it would meet the needs of these agencies, the principal users at this time. This is particularly of interest, I believe, because in the past we have seen NASA developing a family of launch vehicles for its missions and the Department of Defense similarly developing a family of vehicles for its purposes. Yet the objective is the same, that is, that of placing and supporting payloads in space as economically as possible. The committee heard testimony from Dr. John Foster, Jr., Director of Defense Research and Engineering, and from Dr. Robert Seamans, Secretary of the Air Force, both of whom strongly endorse the development of the shuttle, agree that the selected configuration will meet the Department of Defense needs and that it is appropriate the development program and the funding be the primary responsibility of NASA. This approach simplifies the financial and management processes and eliminates duplication of effort. Also, through written agreement NASA and the DOD have provided for full cooperation in the space shuttle development program with DOD representation on the configuration and facility selection boards which assure that the end product will be fully usable by the Department of Defense. This is not to say at all that the shuttle is or should be a DOD or Air Force vehicle. It merely says that the committee believes that the development of this advanced space transportation system is being properly approached in the best interests of the Nation and that procedures exist to assure that one vehicle will be able to properly serve the needs of all users.

Your committee, Mr. President, is recommending $1,500,000 for the advanced missions program for fiscal year 1973, the same level approved for fiscal year 1972. It is also the same amount requested by the administration and approved by the House. This funding will support studies of concepts and suggested activities which are later evaluated for their contribution and/or relationship to future space missions.

The committee is recommending $156,600,000, an amount identical with the NASA request for the physics and astronomy program. This amount is $4 million above that approved by the House in H.R. 14070. This program sup-

ports research in space physics and astronomy, utilizing solar and astronomical observatory spacecraft, less complex Explorer-type spacecraft, sounding rockets, balloons and other instrumented devices with which to measure the phenomena in space. The fiscal year 1973 amount recommended by the committee is $46,500,000 above the fiscal year 1972 operating plan. The increase is principally due to the fact that the high energy astronomical observatory project, approved in previous years, is now entering the hardware phase and, therefore, requires a substantial increase in funding. The objective of this project has been strongly endorsed by the scientific community as one of the most important areas of space science to be investigated. The House cut $4 million from this project. The Committee did not concur with this action because of the current status of the project, and others, hardware development and the fact that evidence indicates that other projects have experienced serious difficulties due to understanding at this particular point in the spacecraft development schedule.

The lunar and planetary exploration program, a program whose objective is enhancing our knowledge of interplanetary space and the other planets in the solar system, includes projects such as the Mariner-Mars 1971 spacecraft which is currently orbiting and has taken many pictures of that planet; the Venus-Mercury 1973 swingby mission which will give additional data on the planet Venus and the initial look at the planet Mercury; the 1975 Viking orbiter-lander mission which will produce a more detailed examination of the planet Mars with its scientific instrument lander package; the Pioneer F and G missions with F—designated Pioneer 10 after launch—launched in March 1972, to provide initial data on the planet Jupiter from a fly-by mission; and, the Helios cooperative project with the Federal Republic of Germany. Last year, the committee recommended a budget cut in and further study by NASA of a proposed outer planets mission, requiring the development of a new spacecraft, known as the "Grand Tour." This would have been a very expensive undertaking and it did not have unanimous support from the scientific community with respect to the priority it held among such projects under existing budgetary constraints. As a result, the "Grand Tour" concept—essentially a 3-planet swingby—has been dropped in favor of separate, smaller spacecraft missions to selected planets at much less cost. This approach is endorsed by the Space Science Board. Major funding in the lunar and planetary program this year is for the Viking spacecraft project which is well along in hardware development in order to meet the 1975 Mars launch opportunity.

The committee is recommending $191,600,000 for the launch vehicle procurement program, the same amount requested by NASA and approved by the House. This represents an increase of $40,300,000 above the operating plan for fiscal year 1972. However, this program funds the procurement and launch of the launch vehicles for all of the unmanned spacecraft programs and, therefore, is directly impacted by the number of these launches. The major increase this year is for procurement of the Titan 3/Centaur and the Titan 3C launch vehicles to support the HEAO, Helios, and Viking missions just referred to and applications technology satellites F and G which are funded under the space applications program.

The committee is recommending $207,200,000 for the space applications program, an amount $12,500,000 above the budget request and an amount $8.5 million above that approved by the House. This program supports those unmanned spacecraft activities which are oriented to utilizing space as a platform to provide data with which to enhance our everyday activities such as weather prediction, communications, earth resources evaluations and utilization, and similar activities. It is through this program, notably in the area of weather and communications satellites, that we have identified and developed the technology for some of the most immediate benefits of space technology to the Nation as a whole, and the program is designed to improve our existing technology in these areas as well as experiment with new technology, particularly in the earth resources area to identify additional benefits which can be realized from such space-based platforms.

The committee believes that such applications should receive priority attention by NASA and it is greatly encouraged by the recent elevation of this program area to the management level of Associate Administrator. In view of the proven contributions of the applications program to date, the committee was at a loss to understand why the NASA fiscal year 1973 budget request to the Office of Management and Budget for this program was reduced and in the absence of any sound reasons therefor, the committee has reinstated $12.5 million of the OMB reduction—$7.5 million to offset a programwide decrease and $5 million for the initiation of a small applications technology satellite. The House, in its action on the bill, had previously added $4 million for accelerating studies for an earth observatory satellite project; however, since testimony by NASA witnesses indicated that the other two items just mentioned had a higher priority, the committee did not agree with this House addition.

NASA requested $163,440,000 for its aeronautical research and technology program, an increase of $53,440,000, or about 50 percent, above the operating plan for fiscal year 1972. The aeronautical research activity of NASA was inherited from the National Advisory Committee on Aeronautics when NASA was formed in 1958. NACA and NASA have a splendid history in aeronautical research developments and the conduct of advanced research in aeronautics has been responsible for the leadership which this country currently enjoys in aviation technology.

However, this is a highly competitive field and we find European nations, as well as the U.S.S.R., pressing to compete in the world aircraft market. Therefore, the committee is quite pleased with the increasing attention given this program area as reflected by the major increase in funding over the previous year. In its deliberations on this bill, the committee discussed at length the $41 million added by the House to the NASA request of $9 million for development of retrofit kits for existing JT3D engines used on DC–8 and B–707 aircraft, and for JT8D engines used on DC–9, B–727 and B–737 aircraft, with the objective of reducing the noise generated by these aircraft. This proposal was a very late addition to the NASA budget. The committee concluded that certain aspects of this matter had not been studied fully and that additional information should be developed. Therefore, the committee did not agree with the House addition of $41 million to accelerate this program at this time. The House further approved a $7,450,000 addition to this program for increasing the effort on several activities related to aviation safety such as clear air turbulence detection and collision avoidance systems. The committee noted that NASA does have work underway in this area and that certain of these activities are the primary responsibility of the Department of Transportation. Further, it was not clear from NASA's standpoint at least, that these many activities were not now adequately funded and accordingly did not concur with the House addition.

Mr. President, I may say that since the committee concluded the markup on this bill, we have made further study in this area. Later on I will propose a committee amendment which will change the committee's action to some degree, but not as high as the House proposal.

The committee is recommending $64,760,000 for the space research and technology program, which is identical to the House approved amount and to the NASA budget request. This program level is approximately $10 million below the fiscal year 1972 operating plan, part of which is attributable to completion of selected research tasks which were being performed in support of the space shuttle program.

H.R. 14070 contains $21,100,000 for the nuclear power and propulsion program, which is almost $50 million below the authorization recommended to the Senate for fiscal year 1972. The significant action reflected in this reduction is the termination of the 75,000-pound thrust NERVA nuclear rocket engine development program after the expenditure of some $1.4 billion. In lieu thereof, NASA proposes to study the definition of a 20,000-pound thrust nuclear rocket engine which would be evaluated against other potential propulsion systems in this thrust range which could support long duration, high energy requirement planetary missions in the 1980 time frame. The committee believes it is a mistake to terminate the NERVA engine program, particularly when it has been an extremely successful technology program and would provide a very efficient, high thrust space propulsion capability and thereby keep the Nation in the forefront of space technology. It appears to the committee that there was a great deal of

inconsistency in the planning activities surrounding this decision inasmuch as the President's Space Task Group had endorsed this development as a vital part of an overall space transportation system needed by the country. Now this is being terminated. Concurrently, a new development is being considered which, although it will be able to utilize some of the NERVA technology, it is reasonably clear that the technical teams and a great deal of effort expended since the NERVA was placed in development during fiscal year 1970 will not be utilized. Your committee believes that the planning process must be improved to avoid these expensive false starts in the future.

The committee is recommending $259,100,000 for the tracking and data acquisition program for fiscal year 1973. This program provides funding for a worldwide tracking and communications network which controls all of the NASA space flight missions, whether manned or unmanned, and provides for the acquisition of scientific and applications data which is produced by the spacecraft. Network performance is absolutely essential to the success of our many manned and unmanned projects, and its record is outstanding. As the Apollo lunar program draws to a close, planning is underway to effect consolidations within the network to provide the most efficient use of the equipment, reduce operating costs and to reorient the network to most effectively and efficiently support the missions forecast for the future.

NASA requested $4 million for its technology utilization program for fiscal year 1973. The committee is recommending this amount for this program which is designed to provide for the identification and dissemination of space technology to the nonaerospace community. The committee believes that this program is being more effectively implemented than it was in previous years and that an effective program can be conducted at the requested budget level. Consequently, the committee did not concur with the House addition of $1.5 million for this program.

CONSTRUCTION OF FACILITIES

The committee, in H.R. 14070, is recommending an authorization of $77.3 million for the NASA construction of facilities program for fiscal year 1973. This amount coincides with the NASA request and with that previously approved by the House in its action on the floor.

Of the amount recommended, $69.3 million is for actual construction and construction-related work and the remaining $8 million is for facility planning and design activities. I should like to stress that approximately 60 percent of the funds recommended for construction work would be used for the rehabilitation and modification of existing facilities in order to offset the effect of technological obsolescence and/or deterioration resulting from age and extensive utilization of the NASA capital plant.

This work is necessary to maintain the facilities in a usable condition, to upgrade the existing plant to accommodate advanced research efforts reflecting technology advancements since the facilities were first placed in service, and to modify facilities to support new endeavors. For example, one of the projects at the Langley Research Center is to rehabilitate a wind tunnel that has provided 40 years of aeronautical research service. On the other hand, another of the projects recommended will provide for the modification of newer facilities at the Kennedy Space Center to support the Viking unmanned mission to Mars in 1975. In this group of projects I am presently discussing there is only one which I would consider to be a new building and that is a small warehouse at Wallops Station to replace a completely inadequate building which has more than outlived its expected useful life.

The remaining 40 percent of the construction projects in the bill, estimated to cost $27.9 million, are necessary to conduct the research tasks, development, fabrication, assembly, and test activities associated with the space shuttle program. Here again, however, each one of these projects involves the modification of, addition to, or conversion of existing facilities to serve this new need which maximizes the use of the current investment in facilities thereby minimizing expenditures for new facilities for this advanced development program.

Last year, the committee expressed its dissatisfaction with certain aspects of NASA's facilities management program and requested that the agency make a critical review of this part of its business. Such a study was completed in January 1972, and one of the recommendations was consolidation into the construction of facilities section of the bill the major portion of those facilities needs which heretofore had been accomplished to an undesirable degree, in the committee's opinion, under both the "Research and development" and the "Research and program management" appropriations. Presentation of these types of projects in the construction of facilities section, therefore, has the effect of increasing the amount of funds budgeted under C. of F. while more fully identifying facilities projects thereby providing better visibility and control. I mention this to my colleagues so that there will be a better appreciation for the number of projects and the amounts recommended for authorization in this section of the bill this year.

RESEARCH AND PROGRAM MANAGEMENT

The committee is recommending $729,450,000 for the Research and Program Management appropriations category for fiscal year 1973. This category provides for the salaries of NASA employees doing research in NASA laboratories and/or responsible for the management of the research and development programs I have been discussing, or engaged in Agency support functions. It also provides the funding for maintenace, utility services and the many other supporting services necessary for the operation of the several NASA installations. Approximately 70 percent of this appropriation category is allocated to salaries of direct NASA employees—over 60 percent of whom are scientists, engineers and technicians. Personnel and related costs for fiscal year 1973 are estimated at $572,237,000 and your committee, as in the past 2 years, is recommending a provision in section 1(c) of the bill and a complementary provision in section 4 (b) of the bill which would limit NASA's expenditures for personnel and related costs to this amount. The House version of H.R. 14070 does not include such a limitation.

My colleagues will recall that in the opening paragraphs of this statement I mentioned that the House had not acted upon an amendment to the fiscal year 1973 budget submission which requested an additional $28,650,000 for NASA to cover the fiscal year 1973 impact of the Federal salary increase which became effective January 1, 1972. The amount of the budget amendment, $28,650,000, and the fact that the House did not act upon the amendment, accounts for the difference between the amount approved by the House for this appropriation category, $700,800,000, and the amount recommended by your committee, $729,450,000.

LEGISLATIVE CHANGES

The committee is recommending three legislative amendments to the NASA fiscal year 1973 request. The first amendment would modify section 1(b), construction of facilities, item 13, to identify as subline items the individual facilities recommended for the space shuttle program in this bill. This action was taken consistent with the committee's position that major projects should be so identified. The second and third amendments I have just touched on inasmuch as they modify section 1(c) and add a subsection 4(b) to establish the limitation of $572,237,000 on the amount available for personnel and related costs.

CONCLUDING REMARKS

Mr. President, I believe this is a good bill. I believe it is well balanced between space and aeronautical activities and between long-range and short-range projects. Most significant, I believe, is that, as I indicated in my opening remarks, it provides a sound base for future endeavors in space and aeronautics and, yet, it is so structured that commitment to any one single project will not create an undesirable imbalance in the total program or necessitate peak funding inputs which may be unacceptably large. It also provides the flexibility to accelerate ongoing projects or initiate new undertakings in the event these courses of action may be desired. I believe it is essential that we, as a nation, continue to advance the state of our science and technology and, I think that this program for NASA for fiscal year 1973 will contribute to this advancement. Therefore, I urge my colleagues to support H.R. 14070 as presented here today.

Mr. President, I yield such time to the distinguished chairman of the committee as he may desire.

Mr. ANDERSON. I thank the Senator for yielding.

Mr. President, as chairman of the Senate Committee on Aeronautical and Space Sciences, I have presided for the last time over the hearings and markup of the annual NASA authorization bill. The resulting legislation reported to the

Senate as H.R. 14070, is a good bill and should pass.

Mr. President, all committee members worked diligently on this legislation. I commend the members of the committee for the great interest they have taken in the bill and the fine support and cooperation they have given me. In particular, I would like to commend the ranking minority Member, the Senator from Nebraska (Mr. CURTIS) for his effort and support. Also, I would like to thank the Senator from Nevada (Mr. CANNON), the floor manager of the bill, for the time he has devoted to understanding the major issues and for his support during the committee's consideration of this bill.

Some of the members have been on the committee for a long time, four of us since the committee was first formed in 1958, others since the late fifties or early sixties. However, I think it is appropriate to mention that the less senior members of the committee have had a good deal to say about the committee's recommendations on this bill and I am deeply grateful to them for the great interest they have shown and the time they have spent on it.

Mr. President, I have chaired the committee through 10 NASA authorization bills. I know of no prior authorization bill on which the committee worked harder or on which the committee has made a better record than will be found in this year's hearings. I think the members of the committee have done an outstanding job, and I urge the Senate to pass the bill recommended by the committee.

Mr. CURTIS. Mr. President, I yield myself such time as I may require.

The PRESIDING OFFICER. The Senator from Nebraska is recognized.

Mr. CURTIS. Mr. President, I commend the distinguished Senator from Nevada (Mr. CANNON) for his very able explanation of the purposes served by H.R. 14070, the NASA authorization for fiscal year 1973. Under the leadership of the distinguished senior Senator from New Mexico (Mr. ANDERSON) the Committee on Aeronautical and Space Sciences has reported a bill which, I believe, deserves the support of the entire Senate.

There are two salient features of the NASA authorization for fiscal year 1973:

First, the NASA budget has been stabilized.

Second, we now have a commitment from the President to proceed with the development of the space shuttle transportation system—a system that will save the taxpayers and space users billions of dollars.

With all the demands being made upon the National Treasury, it is inevitable that each Federal program would come under intense scrutiny. This has certainly been the case where the space program is concerned.

The space program as planned last year would have required funding levels in future years of about $4 billion. The budget as it is being presented to the Senate this year is substantially below that figure. Moreover, it has run-out costs that are lower than was thought possible last year. In part, this can be attributed to greatly reduced developmental costs for the space shuttle, which I will discuss briefly elsewhere in this statement.

As a matters now stand, the run-out costs for the space program are $3.37 billion in fiscal year 1974, $3.3 billion in fiscal year 1975, and $3.2 billion in fiscal year 1976, and $3.1 billion in fiscal year 1977. These projected run-out costs are measured in 1972 dollars and do not contemplate any new starts.

NASA's budget of $3.4 billion, while a substantial amount of money, actually only represents 1.4 percent of the total Federal budget—a percentage that is small but productive.

I would remind my colleagues that in 1966 the NASA budget was almost $6 billion.

Since the Senate last considered the NASA authorization, there have been some dramatic changes in the space shuttle program. In what may come to be considered as one of the great engineering feats of this decade, the overall development costs of the shuttle have been reduced from over $12 billion to a range of $5.15 to $6.15 billion. This cost reduction has been accomplished without sacrificing any of the shuttle's capabilities.

The space shuttle, during the 12 years that it will be in use from 1978 to 1990, will save the American taxpayers and space users an estimated minimum of $5 billion with a relatively low traffic model. A bigger traffic model could provide savings up to $16 billion.

How do these savings occur?

With the space shuttle, payloads require less redundancy, can be simpler, and in some instances can be repaired. As the Senators well know, when we launch a satellite with our currently existing rockets, if there is a failure, it is total. Accordingly, very stringent quality controls must be applied to assure a high degree of reliability.

With the shuttle, more off-the-shelf items can be used, and less reliability is required, because we have the option of retrieval and repair.

For those who doubt the savings that will result from an operational space shuttle, I ask them to ponder the following question:

How many airlines throw away their airplanes after one flight?

The economics of the space shuttle have been the subject of a study by the Advanced Technological Economics Group at Mathematica, Inc., of Princeton, N.J. In essence, it finds the space shuttle to be economical with as few as 30 flights per year—a level of activity that is reasonable to assume for historic reasons.

Our Nation faces a growing energy crisis. We are running out of fossil fuels. Even the amount of fissionable material is finite.

If man is to survive on earth, he must find sources of relatively cheap energy that are socially acceptable. Because of these considerations, the President issued an energy message last June 4 to mobilize the Federal Government in this area. As part of this effort, NASA and the National Science Foundation were directed to study the use of solar energy and solar cells.

Reports to the President on energy are due presently.

On page 48 of the Senate report accompanying H.R. 14070, there are four paragraphs concerning solar energy. These four paragraphs are designed to convey a sense of urgency to NASA on the energy problem—a problem of growing and vital concern to our fellow citizens.

During its hearings on the NASA authorization for fiscal year 1973, the Committee on Aeronautical and Space Sciences heard testimony on the importance of high technology exports to America's balance of trade.

Exports of high technological wares amount to about $24 billion annually with aerospace industries contributing some $4 billion. Over the years, NASA's research has provided the cutting edge for technology which in part has led to America's preeminent position in aerospace markets.

According to the latest figures published by the National Science Foundation, America spent a total of $26.8 billion in 1971 for R. & D. The estimated figure for 1972 is $28 billion. During the 1967–69 period, the Nation spent $55 per capita annually for research and development. These are impressive figures. It means that America has been spending nearly double the per capita amount for R. & D. of any other country in the free world.

While these figures indicate a substantial R. & D. effort in absolute terms, nevertheless, there are other figures that provide concern for the future. I refer to the increasing sums being spent by some of our trading partners in an effort to overtake us in high technology production. For example, in the 1967–69 period West Germany had an average annual R. & D. growth of 16 percent. Japan had an even greater annual growth rate in R. & D. amounting to 33 percent. The corresponding figure for the United States was 5 percent. It is evident, that should this trend continue, the United States can expect increasing competition, and probably substantial losses, in high technology markets.

In the field of aviation, this competition is now a reality. Two wide-bodied aircraft for high-density lines are near the point of entering the marketplace. Both incorporate advanced engine technology. First, a European consortium of aircraft companies has taken the lead in developing so-called airbuses. I refer to the new A–300B airbus developed by French, German, Dutch, British, and Spanish companies.

This aircraft is a 280-passenger, twin-engine plane for medium distance routes. Admittedly, it is tailored to European needs. If, as some authorities believe, the A–300B airbus has application to American air routes, we will find Europe, for the first time since World War II, a serious challenger in commercial aviation. We have no equivalent aircraft for sale or under development.

Second, another short-haul aircraft under development in Europe is France's Mercure in cooperation with Italian, Belgian, Spanish, and Canadian partners. It

is a short-haul, 150-passenger, twin-engined aircraft. Backers of the Mercure claim it will show a profit with a load factor of as little as 22 percent. Or stated another way, the Mercure's seat-mile costs are claimed to be at least 10 percent below those of any other airliner on short hops. While the global market for this aircraft is less certain than the A–300B, here again we have no equivalent aircraft.

In view of the increased competition from abroad in aviation, I am gratified to see that NASA has substantially increased its budget requests for aeronautical research and development. Further evidence of greater emphasis on aeronautics at NASA is provided by the fact that NASA now has an Office of Aeronautics and Space Technology.

At our best, we Americans are creative, energetic, and optimistic.

These qualities enabled us to build a strong Nation with vast resources—a Nation that put man on the moon in less than a decade.

They should enable us to compete in a world ever more competitive.

They should provide wherewithal for meeting the changing needs and demands of our society.

They should buttress our confidence that a better future is in store for all mankind.

The authorization we are considering today represents one of the few areas where Federal money is spent for programs that are creative, energetic, and optimistic. As such, it is symbolic of the best in us. I urge my colleagues to join in supporting H.R. 14070.

THE PRESIDING OFFICER. Who yields time?

Mr. CURTIS. I yield 10 minutes to the Senator from Arizona.

Mr. GOLDWATER. Mr. President, I rise merely to compliment the chairman of the committee (Mr. ANDERSON) and the Senator from Nevada (Mr. CANNON), and the ranking Republican member of the committee, the Senator from Nebraska (Mr. CURTIS). It is my pleasure to serve as a member of this committee, and I can tell the Senate that I have never served on a committee that gives such detailed attention to the requests of its agencies.

I also wish to recognize the wonderful job Mr. James Gehrig does in connection with the staff work. It is a pleasure to serve with him, and I look forward to serving with him for many years to come.

My one reaction to Dr. Fletcher's appearance this year is that we have finally achieved stability in the space program. I think the days of asking for $8 billion one year, $4 billion the next year, and $2 billion the next are over, and I think we can look down the long road now and see developments taking place in a logical order, which will result in a great saving of money to the United States.

I am also convinced that our expenditures in NASA are very wise. I believe that in years to come we will find an increasing return on this investment to the American people in the form of better ways of living and safer ways of living.

So, Mr. President, I am very glad to support the Senate version of H.R. 14070, and I hope for quick and unanimous passage.

The PRESIDING OFFICER. Who yields time?

Mr. CANNON. Mr. President, I send an amendment to the desk and ask for its immediate consideration.

The PRESIDING OFFICER. The amendment will be stated.

The assistant legislative clerk read as follows:

On page 12, lines 17 and 18, strike out "$163,440,000" and insert in lieu thereof "$187,440,000".

Mr. CANNON. I yield myself 5 minutes.

Mr. President, the amendment to the bill which I have sent to the desk is a committee amendment agreed to by the members of the committee. The effect of this amendment would be to increase NASA's aeronautical research and technology program from $163,440,000 to $187,440,000, an increase of $24 million. $21 million is to be used for expedited effort on a project to design and demonstrate certifiable retrofit modifications to JT3D and JT8D engines and nacelles used on slim-bodied aircraft currently in service in the civil air fleet to reduce the noise generated by these aircraft. The other $3 million is to be used to increase NASA's activities in the area of aviation safety with priority attention to be given to development of aircraft collision avoidance systems with some lesser emphasis, not to exceed $700,000, for research on trailing vortex and clear air turbulence. No part of the $3 million addition in this amendment is to be used for work on the new FAA microwave landing system.

Mr. President, as I indicated in my opening statement on the bill, the committee discussed both of these matters at great length during the markup session because of the committee's long standing belief that NASA should increase its efforts in aeronautical research and technology and because of the fact that the House in its action on H.R. 14070 had increased the aeronautical research and technology program by $48,450,000 of which $41 million was for the JT3D and JT8D engine retrofit project and $7,450,000 was for activities related to aviation safety. At that time the committee considered that additional information should be developed through those agencies; namely, the Department of Transportation and NASA, who have responsibility in the noise abatement and aeronautical research area. Such information has been received and evaluated and, accordingly, the committee believes that the addiction of $21 million to the original engine retrofit program request of $9 million, making a total of $30 million available for the new front fan retrofit program to reduce aircraft noise, will provide sufficient funding to initiate and move this program forward on a well managed basis. The committee is most conscious of public concern over aircraft noise being generated by the civil air operations at the many domestic airports. However, its study of the matter indicated, and still does indicate, that there is a considerable amount of coordination, as well as hardware engineering, to be done in order to make this a successful and meaningful program. It is for this reason that the committee in this amendment does not agree completely with the House recommendation to add $41 million in fiscal year 1973 for this noise reduction effort.

Aviation safety continues to be a matter of paramount importance to the committee and there is agreement amongst our members, based upon the latest information available, that increased NASA effort in this area would expedite the availability of meaningful devices which could be used by the certificated air carriers and general aviation aircraft, both of which are necessary if an effective collision avoidance system is to be developed and placed in service in the immediate future. This is a real need and all too often one reads a newspaper account of another near-miss between a commercial carrier and a general aviation aircraft. In fact, there was one just the other day over northwest Virginia.

Mr. President, it is for the foregoing reasons that the committee recommends a further increase of $21 million to the engine retrofit noise reduction project and an increase of $3 million for the two areas of aviation safety which I have discussed.

NOISE

Mr. President, I want to make clear to the Senate that the additional $21 million authorization we seek to add to the aircraft noise abatement program will not result in increasing total expenditures for the retrofit program; rather it will simply speedup the current time table for the development of flight and ground test hardware. This speedup will result in savings of more than 1 year and will make available to the FAA, the agency responsible for regulating aircraft noise, data which will, for the first time indicate the greatest possible noise reduction benefits and their cost which can be achieved with present technology.

The FAA is currently contemplating issuing an advance notice of proposed rulemaking requiring retrofit for noise suppression of the current U.S. fleet of narrow-bodied jets.

It is important that the results of the NASA program to develop a quieter JT–3 and JT–8 engine be available to the FAA prior to issuing a final rule.

Mr. President, the NASA program for research toward retrofitting our older jets is a relatively new and important development. Basically, the NASA retrofit program is based on a redesigned enlarged fan which will significantly increase the bypass ratio of the JT–3 and JT–8 engines, resulting in better performance on the one hand and quieter operations on the other. Together with the program now underway at the FAA which is seeking to quiet present engines by acoustical treatment of the engine nacelles, this effort will give the United States a thorough and complete understanding of what present technology can do to reduce aircraft noise generated by the narrow-bodied fleet.

In the committee's view, one of the biggest problems confronting civil aviation today is that of aircraft noise, an environmental nightmare which has vir-

tually halted all new airport development in the United States today.

I need not remind my colleagues that one of the greatest sources of irritation in our present U.S. environment is excess aircraft noise over our cities and around our airports. Therefore, it is vitally important to speed up the NASA retrofit program so that all technological and economic data will be available to aid the regulatory agency in determining the standards which must be met in any program requiring engine retrofitting of today's jet fleet.

AVIATION SAFETY

Mr. President, the Subcommittee on Aviation of the Senate Commerce Committee, which I chair, has recently held hearings on the problem of midair collision and the need to develop airborne anticollision systems which will provide a greater measure of safety to millions of Americans who use our air transport system. In the coming decade the midair collision problem will grow as the number of planes in the U.S. civil fleet is expected to increase to more than 200,000. Therefore, it is imperative that work be speeded up in developing practical low-cost collision avoidance systems. In addition the committee proposes that of the $3 million additional authorization for aviation safety, not more than $700,000 should be authorized for continuing studies on the problems of clear air turbulence, another significant civil aviation problem particularly related to our jet powered aircraft which fly at high altitudes.

Mr. President, I urge the adoption of the amendment.

Mr. CURTIS. Mr. President, will the Senator yield?

Mr. CANNON. I yield.

Mr. CURTIS. I thank my distinguished colleague. I merely want to state that I concur in this amendment, and urge its adoption.

Mr. GOLDWATER. Mr. President, will the Senator yield?

Mr. CANNON. I yield.

Mr. GOLDWATER. Mr. President, I rise in support of the amendment offered by the Senator from Nevada (Mr. CANNON).

This amendment is aimed at restoring a sizable portion of the funds to the NASA budget which had been included in the House-passed authorization in the fields of aircraft noise abatement and aviation safety. The House bill added $41 million earmarked under NASA's aeronautical research and technology program for noise reduction and $7.45 million allotted under the same line item to aviation safety purposes. The total increase in authorization which is contained in the pending amendment would restore $24 million of this amount, including $21 million which, as I shall explain, is not really additional funds at all but merely a shift of funds from future years to 1973.

Mr. President, there are probably very few programs which the general public would like to see moved along as swiftly as the goal of jet aircraft noise reduction. The problem of noise is affecting people nationwide from every income group and is considered by many to be an intolerable condition. This is a general impression which many citizens, including a great many in my own State, have right now, without even considering the fact that the total number of air operations, landings, and takeoffs, are predicted to double every decade throughout the rest of this century. Since most airports are too noisy for their neighbors today, you can imagine how this increase in capacity will aggravate the situation unless immediate steps are taken to decrease noise in the future.

Mr. President, there are several ways this problem can be handled, and they are all being considered right now by the joint DOT/NASA Noise Abatement Office which has prepared a 10-year noise abatement plan that is in draft form and is nearly ready for publication. This is responsive to the popularly known CARD Policy Study, which was initiated at the urging of the Senate Committee on Aeronautical and Space Sciences and which concluded that noise reduction is the No. 1 problem facing civil aviation. In my opinion, the most promising effort among the near-term noise reduction programs being planned by this Office is one for which additional funds are provided in the pending amendment, the development and demonstration of modifications to the JT-3D and JT-8D engines now in use on almost 2,000 domestic aircraft and 1,000 foreign airplanes.

In short, the near-term program is aimed at developing ground and in-flight tests of engine modifications on five models of civil aircraft, leading to FAA certification of such modified aircraft with an end result of the maximum possible noise reduction. The idea is to develop and prove the technology required to retrofit, or modify, the entire existing civil fleet of B-707's, B-727's, B-737's, DC-8's, and DC-9's being operated by the U.S. airlines so as to achieve the greatest noise control at a minimum retrofit cost and performance loss to the aircraft.

In the NASA program the jet noise of the engines used on these aircraft will be reduced by increasing their fan size in order to handle more airflow. Thereby the same thrust can be produced at a lower jet velocity and a lower jet noise. Nacelle acoustic treatment will also be used to control fan noise, and although this introduces some thrust loss, increasing the airflow will more than compensate for the added weight of the larger fan and modified nacelles. The modified engines will actually operate more efficiently after retrofit, with increased thrust and lower fuel consumption.

In contrast, an alternative program which the FAA is pursuing with nacelle treatment and jet suppressors results in an overall performance loss to the airplane.

Now, the expedited program which the House recommended could lead to an initial retrofitted aircraft on line by January of 1976. In fact, Mr. Roy Jackson, Associate Administrator of NASA, testified on February 17 that:

An all-out program—completely funded and with no constraints on moving ahead could result in operational aircraft with retrofitted engines being in service in three years, and even as early as 2½ years, from time the go-ahead was given.

This would offer the prospect of beginning retrofitting by January of 1975 or certainly by 1 year afterward at the very latest.

On the other hand, the record indicates that the program reported by the Senate committee will lead to a time frame of January 1977 at the best, with a high chance of slippage even from that date. One factor which must be fully recognized is that the baseline program will result in flight tests which are not completed until more than a year after the related FAA noise rule would be issued. Obviously, this might cause a delay in aircraft orders until the performance of the new fan modified engines could be demonstrated in actual flight, which might cause a slip in the first delivery of a retrofitted aircraft.

In between the two programs is an alternative version of the expedited schedule which provides for the earliest possible flight tests of two of the five aircraft involved in the retrofit program. The Boeing 727 is one of these because it is the aircraft for which a possible FAA rule for retrofit is planned to be issued first. The DC-8 also would get expedited flight tests in order to balance the program between Boeing and Douglas and between the JT8D and the JT3D. This approach puts the program in step with the planned FAA regulatory procedures and should result in the same flight test dates for the two aircraft involved as the House approach. It would require $35 million in fiscal year 1973, $30 million of which is provided in the pending amendment and $5 million of which NASA would have to reprogram from other funds if it determines the program lives up to its full promise.

In summary, the baseline program of $9 million in fiscal year 1973 results in the first delivery of retrofitted aircraft 1 to 2 years later than either of the two expedited programs. What is more, there is every reason to believe that the expedited programs would save money as against the baseline schedule. While the estimated total is now put at the same amount, $130 million, one way or the other, Mr. Jackson of NASA testified that it is generally true that sizable savings can be accomplished on a research program whenever its timespan can be compressed.

Mr. President, I should mention that the end result of any one of these retrofitting programs will achieve a dramatic noise reduction in the current aviation fleet. It even would bring jet noise below the existing noise maximums prescribed by Federal air regulation 36 for certifying new models of aircraft. These projected noise levels are based on data already in hand and would bring noise reductions of from 10 to 17 EPN db. I might also mention that the total fleet of the five types of aircraft involved that will be in the domestic inventory in 1980 is 1,570, plus 1,070 foreign airplanes. Not only will there be a tremendous number of these older model aircraft still in use in 1980, when the retrofitting program will be completed, but I would remind my colleagues that

these are the type of airplanes which regularly make 12 to 20 landings and take-offs a day, increasing the number of people who are subjected to objectionable noise levels.

There is no question that the retrofit program is realistic. The only question is whether or not we will allow the American public to suffer for 1 to 2 years more than is necessary. I think the answer to that is obvious.

Mr. President, the second area in which the amendment would provide additional funds is air safety, the number two problem identified by the CARD study results. One aspect of this area which is especially critical is the need for making available, for all aircraft flying in this country, a low-cost, reliable collision avoidance system. Literally, this system can be defined as the aircraft equipment needed to derive and display, to the pilot, specific command maneuvers necessary to avoid an airborne collision.

Representatives from NASA, DOD, and the FAA have joined together to form the Interdepartmental Group on Collision Avoidance and Pilot Warning, thhe purpose of which is to establish a close-working relationship between all Government agencies examining this problem. It is my belief NASA requires additional support in this area if it is to pull its weight in this cooperative arrangement. The other agencies have budget allocations of almost $3 million for collision avoidance research and I believe that NASA should be spending a comparable amount on its work in this field.

Mr. President, I might mention that my son, Congressman GOLDWATER, was personally responsible for persuading the House committee to add funds for collision avoidance research, and I salute him for his wisdom. I understand that a rock bottom sum of $2.3 million is to be reserved for this program under the pending amendment and that NASA is encouraged to devote the entire $3 million to it.

In summary, Mr. President, I am pleased to join in support of the pending amendment, which closely fits most of the suggestions I had made in my additional views to the committee report. In the best of all possible worlds, I would like to see progress moving ahead on all the programs which I have discussed in the report on an "as soon as possible" basis, but I am delighted at the large increase in program support which is represented by the pending amendment and believe it will strongly benefit the future of aviation and the public interest.

Mr. TUNNEY. Mr. President, I was most disappointed to learn that the Senate Aeronautical and Space Sciences Committee severely cut back the amount of money approved by the House in H.R. 14070, NASA fiscal year 1973 authorization act for an expedited aircraft retrofit program. I am pleased that the committee has now reached an accommodation with the House in the matter, and has offered an amendment to H.R. 14070 whereby $24 million is added to the committee's authorization for NASA: $21 million for R. & D. on retrofit and $3 million for research in the important area of turbulence, safety, and collision. I fully support this amendment.

With all of its outstanding activities in the area of space exploration, too often we have forgotten that the first "A" in NASA stands for aeronautics. NASA, along with its predecessor agency, the National Advisory Commission for the Advancement of Aeronautics, has long been in the business of advancing aircraft technology.

To my mind, at the present time the most underdeveloped aspect of aircraft technology is the control of aircraft noise.

The statistics are devastating. Despite the fact, according to EPA, that 95 percent of the expenditures of time and money on research to control noise pollution has been spent on the control of aircraft noise, there has been least progress in this field.

Despite the fact that the FAA has had statutory authority to regulate aircraft noise since 1958 and regulations on this subject have existed since 1968, virtually no control of aircraft noise has occurred.

Part 36 of the Federal Aviation regulations applies only to new aircraft, and has resulted in postponing the retirement of the existent fleet. Moreover, decreases in noise emissions of new aircraft by virtue of the regulations is expected to be offset by increases in the daily number of flights.

Clearly, given this inadequate regulatory scheme, there must be a focus on retrofit of the existing fleet if we are to help between 10 and 40 million Americans whose health is endangered by effects of aircraft noise pollution.

Research into the subject of retrofit must be as comprehensive as possible. I would hope that not only reduction in fan and compressor noise be investigated, but also the matter of the high velocity of gas, which I am informed is a principal source of noise in aircraft engines. Further, provisions should be made for such items as thrust reversers, anti-icing or fire prevention, to mention some of the safety equipment which must be incorporated in order to get FAA certification. In these ways, we can be assured that our quiet engines are safe engines.

We must also consider whether, in the long run, it would not be better for safety, for the economy, and also for the industry, to focus on encouraging the replacement of the existent fleet rather than the retrofitting of it. Even so—given the long leadtime and extraordinary expense in building new aircraft—we must devote time and money to the control of noise from planes now flying. Indeed it is estimated that by requiring retrofit modifications to existing aircraft, we will be able to reduce noise by 10 decibels 5 to 10 years sooner than we could by phasing out the older equipment.

In conclusion, let me put this NASA authorization in perspective. We have a dire need for research and coordination of research on all aspects of the control of aircraft noise. We must bring together the separate activities of EPA, the FAA, DOT, the CAB, NASA, and other Federal, State, and local agencies, industry, and the public, to arrive at a comprehensive scheme to eliminate the effects of aircraft and airport noise on the public health and welfare. In addition to defining relationships and goals, we must consider: First, more extensive and rapid application of aircraft engine noise suppression technology; second, employment of noise abatement procedures to aircraft takeoff and landing; third, more flexible use of airspace around airports; fourth, control and limitation of the number of types and times of aircraft operations; fifth, the rezoning of airports so as to provide for compatible land use; and sixth, the economic aspects of various alternatives currently available or possibly available, including their impact on the national transportation system as well as on the public health and welfare.

Two months ago I introduced S. 3342, the Noise Pollution Control Act of 1972. My bill is one of three currently pending in the Congress and as it will be marked up by the Public Works Committee within the next weeks, I am very much involved in decisions as to what arrangements with respect to control of aircraft noise are most responsible, effective, and protective of the public health and welfare.

There has been a vacuum of responsibility in this area for too long. One result of this is the mood of panic generated by a recent California State Supreme Court decision which would permit property owners to file nuisance suits for damage caused by the noise, fumes, and vibrations from airplanes at airports owned by cities and counties. This decision led the Los Angeles city attorney to recommend to the mayor and city council that Los Angeles International Airport be closed down within 30 days unless the airlines and the Federal Government agreed to protect the public against a possible $10 billion in nuisance suits.

The city attorney has now reconsidered his position and is urging remedial legislation at the State level against nuisance actions.

What we must do, at the Federal level, is to order relationships so that never again will it be unclear who has the responsibility and ability to control harmful effects of aircraft and airport noise.

Mr. CRANSTON. Mr. President, I would like to add my support to the amendment to the NASA authorization bill, offered by Senator CANNON on behalf of the Committee on Aeronautical and Space Sciences. The purpose of this amendment is to raise the figure authorized by the Senate for research and development on jet engine noise reduction for fiscal year 1973.

The basic problem is that more and more planes are using our Nation's airports more and more frequently. This means that the noise produced by the existing civilian jet fleet is increasing.

Aircraft noise is a stress which is intense and repetitive. Excessive noise levels affect human health, relaxation, and sleep. The body responds with a variety of hormonal and neurological mechanisms. Dr. Clifford Bragdon, in his book "Noise Pollution: The Unquiet Crisis," cites evidence indicating that migraine headaches, nervous disorders, colitis, and high blood pressure may be associated with noise. Irreversible damage to the

ear resulting in a loss of hearing can be caused by noise. The harmful effects of noise on both health and human environment must be stopped. Hundreds of thousands of people should no longer be forced to put up with irritating intrusions into their daily lives.

The densely populated areas around our urban airports are the ones which are suffering the most from noise exposure. Neighborhoods are deteriorating. Persons without enough money to move out are subjected to increasing noise against their will.

The well-justified fear of intense, frequent, and prolonged noise exposure that a new airport would provide frequently prevents new facilities from being constructed to handle the increasing air traffic. Overcrowded urban airports are being forced to stack plants in the air over the airport because of the volume of traffic. Landing delays are costly to the airlines as well as irrritating to the passengers. In 1970, for example, it cost United Airlines alone some $25,955,000 in increased operating expenses arising from takeoff and landing delays.

Nothing illustrates the seriousness of our current noise problem better than the recently publicized danger of a shutdown of the Los Angeles airport. The aftershock of a California Supreme Court ruling holding airports liable for nuisance caused by aircraft noise hit Los Angeles, as one California paper put it, "like a catastrophic sonic boom." Pending suits against the airport, based mainly on property damage, already total a staggering $4 billion. Now the Court has opened the door to suits based not only on damage but on nuisance as well. City Attorney Roger Arneburgh has recommended that the airport be shut down within 60 to 90 days unless the airlines and the Federal Government agree to protect the city from claims, losses, or damages resulting from aircraft operations.

Although a city has no control over the use of its landing strips, the type and number of planes flown, or the prevailing flight patterns, the California ruling declares that the law may hold a city liable for the nuisance of aircraft noise. In Los Angeles, the city's taxpayers could wind up owing $10,000 for every man, woman, and child in the city. Mr. President, I ask unanimous consent that articles from the Los Angeles Times and the San Francisco Chronicle on this alarming subject be printed in the RECORD at the conclusion of my remarks.

The PRESIDING OFFICER. Without objection, it is so ordered.

(See exhibit 1.)

Mr. CRANSTON. Mr. President, the impact of this dramatic legal development on one of the world's busiest airports underlines the need for immediate action to reduce jet engine noise. One of the most effective steps is contained in the NASA authorization bill in the form of the noise reduction retrofit program. Let me explain what this program means.

As the words imply, the noise reduction retrofit program will develop improved technology to reduce jet noise by modifying existing aircraft. The main targets of this program will be the JT3D and JT8D engines, used by the 707, the 727, the 737, the DC–8, and the DC–9.

The Federal Aviation Administration has been working with aircraft firms on an acoustic lining of these engines and their casing, called the nacelle. Over a year ago I introduced a bill, S. 1566, which would require that commercial aircraft be retrofitted using this acoustic lining scheme.

In the time since I introduced that bill, NASA researchers have discovered a major new method of noise reduction which concentrates on modifying the engine itself in addition to lining it with an acoustic casing. The program which NASA proposes combines both fan modification and acoustic lining to produce a much larger noise reduction than that stemming from existing FAA technology. The plans for research and development of this important innovation carry my earlier legislation to a logical next step. I propose that funds be authorized so that NASA can perfect this new retrofit technology as quickly as possible.

The total research and development cost of the new program will be $130 million. The total cost will not change regardless of the amount authorized for fiscal year 1973.

According to NASA's projected schedule for different rates of expenditure, the difference centers on the date on which the first plane could be retrofitted. In the light of our current noise problems, there is no time to be lost.

The NASA scheme involves altering the way in which air moves through the engine by increasing the diameter of the fan. This modification will result in a lower jet velocity and a reduction in jet noise. Performance gains of increased thrust and lower specific fuel consumption will compensate for the added weight and drag of the modified nacelles. In other words, this new noise technology will not harm performance. Equally important, noise levels will fall below the maximum decibel limits set by FAA regulations.

The program proposed by NASA should lead to a date of early 1976 for the first retrofitted airplane. The completion of retrofitting the fleet is dependent on many factors, such as the ability of airlines to pull aircraft from operation economically and the optimal capacity of retrofitting itself. NASA administrators believe that completion will occur in 1979 if the program proceeds unfettered. While the research and development proceeds, money will be spent on designs, hardware, and flight tests so that the retrofitted engines can be certified by the FAA.

The newest jet aircraft—the DC–10, the L–1011, and the B–747—produce noise that is approximately one-half as loud as the jets that I mentioned earlier. The Air Transport Association, however, states that less than 7 percent of the planes currently flying are part of this new generation. Almost all of the rest are powered by JT3D or JT8D engines.

Unfortunately, a considerable number of the noisy planes will still be flying in the 1980's. A systems analysis and research corporation study estimates that 700 of these planes will still be active in major airline fleets in 1982. Futhermore, the retirement of planes from major airline fleets does not mean that they will no longer be landing at major airports. Charter airlines and airfreight lines buy older planes retired by major airlines. In fact, charters and airfreight flights usually take place at night, when noise is most disturbing. In short, the number of noisy planes which will still be in use in the 1980's is much greater than just the number which major airlines will have in their fleets.

Mr. President, for all of the reasons which I have outlined, I urge that the Senate authorize a new level of funding for research and development of this badly needed technology.

EXHIBIT 1

[From the San Francisco Chronicle, May 4, 1972]

AN L.A. THREAT TO CLOSE ITS AIRPORT

(By Jack Viets)

LOS ANGELES.—The aftershock of a California Supreme Court ruling that held airports liable for air and noise nuisances emanating from their operations hit Los Angeles yesterday like a catastrophic sonic boom.

The city attorney recommended to Los Angeles Airport commissioners and the City Council that L.A. International—one of the world's busiest—be shut down within 30 days if attempts to exempt it from air-noise suits are not successful.

(At San Francisco International, Director James K. Carr said there "are no plans here to shut down and we would hope Los Angeles International won't have to take this drastic step. It would have a drastic economic effect on Los Angeles-San Francisco air travel, the most heavily traveled air route in the world.")

In Los Angeles, Roger Arnebergh told the City Council that L.A. International is a target of pending suits totaling $4 billion. "That's billions, not millions," he emphasized.

City attorney Arnebergh added that one section of the Supreme Court decision particularly worried him, the part that held "every repetition of the wrong may create further liability."

He interpreted this language to mean that "everytime an aircraft took off or landed, it might result in additional claims."

The decision, handed down last Friday, was in the case of Nestle versus the City of Santa Monica. In it the court held that even if there had been no taking (condemnation) or damaging of property due to airport operations, the plaintiffs could initiate all action on "the theory of nuisance."

PREDICTION

Although most of the $4 billion in suits currently facing Los Angeles International stem from land condemnation actions, Arnebergh predicted that in addition to opening a floodgate of new suits, the Supreme Court ruling would mean "every action now pending against us would include nuisance as an additional cause of action."

The Los Angeles city attorney also warned the council that he interprets the ruling to mean that if city-operated airports are liable for nuisance damages—then the city of Los Angeles and any other California governmental agency—is liable for any nuisance created by any of its public services.

"It means the city could be sued if someone thought a fire engine made too much noise on its way to a fire," he said.

MEETING

The City Council ordered a joint meeting of its State, City and Federal Committee and the Industry-Transportation Committee to

suggest remedial legislation to be sent to Sacramento to nullify the decision.

The two committees will report to the full Council this morning.

The airport commissioners, earlier in a hectic day, said they would await recommendations from L.A. International Manager Clifton Moore on the "broader ramifications" of the situation. Moore promised his report "as quickly as possible."

Moore told The Chronicle that the situation created by the court's decision is the "most critical" he has faced at the airport, which is the nation's third busiest.

The potential liability the airport and Los Angeles face "could be so great that the city can't afford to stay in the airport business," he said.

RESPONSIBILITY

The airport manager and the city attorney told The Chronicle they believe major U.S. airports have "become a federal problem" and that the federal government should accept responsibility for damages caused by airport operations.

The federal government has in essence preempted the field by its control of all air operations, they said.

But although the government controls air transport and air operations, it does not accept the consequent responsibility and liability for damages, they noted.

"The city has no control over who uses its landing strips, the type of planes flown, the flight patterns used, the number of planes landing, nor how the planes are flown," Arnebergh noted.

It is the federal government, he said, which certifies the air carriers, the routes, the planes, their engines and controls the landing and flight patterns.

"LANDLORDS"

He added: "We're just the landlords. We have no control . . . we didn't invent the jets."

And now that Pandora's box has been opened by the state Supreme Court's nuisance ruling, he said, Los Angeles faces the specter of "incalculable" new billions of law suits—far, far "beyond the ability of the airport, the city and its taxpayers to pay."

Moore said that the choices are first, to get remedial legislation, and failing that to close the airport unless the airlines, the Federal Government and aircraft manufacturers and jet engine manufacturers agree to indemnify the city for air-noise suit damages.

Arnebergh said the city may well be enjoined from closing its airport by the court.

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[From the San Francisco Chronicle, May 4, 1972]

L.A. AIRPORT FACES SHUTDOWN

A little-noted ruling by the State Supreme Court affirming the right of adjacent property owners to sue airports for damages created by noise, smoke and other by-products of take-offs and landings, has assumed the dimensions of a multi-megaton legal bomb.

Its potential is of so frightening an aspect as to wring from the City Attorney of Los Angeles the solemn and official advice that "the only prudent course" is to prepare for shutting down the city's busy International Airport within 30 days. It is his belief that Los Angeles, which has already been sued for millions because of airport noises, exhausts and vibrations, might now face "unlimited and unforeseeable liability" for judgments mounting into the billions, and far beyond the ability of the taxpayers to meet.

Such a shutdown, whether or not followed by other airports within the State, would immediately and directly affect air travel and might eventually work economic injury upon the national economy to a devastating extent. Such disaster must plainly be averted, through appeals to the Federal courts or by a shift of responsibility to the federal government or, what is quite unlikely, to the airlines.

Though San Francisco airport is in no present danger of wholesale lawsuits (prompt remedial action by the Airports Commission has brought about dismissal of the only two such suits ever brought against it) James K. Carr, director of airports, concedes that a shutdown of Los Angeles airport would directly and immediately affect operations at the local airport, its coterminus on the busiest route in the nation.

Carr agrees with officials of Los Angeles who hold that airports are unjustly held responsible and liable for damages caused by the airplanes that use them. They feel that the Federal Aviation Administration, which certifies engines that create noise and omit fumes and thus create actionable nuisances, ought to bear the responsibility, if the operators of planes do not.

It has been demonstrated by Pacific Southwest Airlines that the emission of smoke by jet engines can be prevented. It is well known that the noise of jet engines can be sharply reduced if not eliminated by devices which the airlines are reluctant to employ because they reduce power and increase fuel consumption.

John Shaffer, administrator of the FAA, has ample authority to compel the use of such devices or to impose whatever other regulations are necessary to abate the fumes and noise underlying the current crisis. He should promptly exercise such authority, lest the State's airports be forced to prudent closing while legalities of the situation are argued in the Federal courts.

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[From the Los Angeles Times, May 3, 1972]

CLOSING OF L.A. AIRPORT URGED IN CLAIMS RULING—ARNEBERGH PROPOSES SHUTDOWN UNLESS UNITED STATES AIRLINES AGREE TO PROTECT CITY AGAINST SUITS

(By Erwin Baker)

Los Angeles International Airport should be shut down within 30 days unless airlines and the federal government agree to protect the city from claims, losses or damages resulting from air operations, City Atty. Roger Arnebergh said Tuesday.

Arnebergh, in a report to Mayor Sam Yorty, the City Council and the Board of Airport Commissioners, said his recommendation was the "only prudent course to follow" in view of a California Supreme Court landmark decision handed down last Friday.

The court, voting 5 to 2, held property owners may use grounds of public nuisance to sue for damages from noise, fumes and vibrations caused by the operation of city-owned airports.

The ruling reversed a Los Angeles County trial court's dismissal of a $12.5 million class-action suit brought by 700 persons against the city of Santa Monica on grounds that its airport constituted a nuisance, negligence and zoning violations.

INCALCULABLE LIABILITY

Applying the ruling to the operation of the Los Angeles airport "results in potential liability of an incalculable amount," Arnebergh said.

Suits seeking almost $4 billion in damages are pending against the city, "and we will undoubtedly have claims involving many more billions of dollars as a result of this Santa Monica decision," he said.

Attorney Jerrold Fadem, who is representing Playa del Rey and Westchester homeowners in suits against Los Angeles International, said the airlines "already contractually agreed to pay damages" when they signed airport leases.

"He (Arnebergh) is now, I suspect, trying to frighten the courts into changing their ruling." Fadem said. "They have 30 days to do so. It is an attempt to put some pressure on the courts. I really think it is out of bounds."

Arnebergh said his recommended "drastic action" was made with "extreme regret," but "in fairness to the taxpayers of . . . Los Angeles every effort must be made to avoid a catastrophic financial liability which would destroy both the city and its taxpayers."

"This is of particular importance," he noted, "in view of the Supreme Court statement that every repetition of the wrong may create further liability."

He added:

"It would therefore appear that the only prudent course . . . to follow is to advise all the airlines using the . . . airport and the Federal Aviation Administration that in 30 days the . . . airport will suspend operations unless the airlines and the federal government agree to indemnify and hold harmless the city from any claims, losses or damage resulting from operation of aircraft . . . pursuant to authority of and control by the federal government."

Arnebergh recalled that at various times during the last few years when the multiplicity of damage actions against the airport and the amount of potential liability reached such "astronomical heights" that there was "no chance of payment" in the event of unfavorable decisions, he had suggested the commission take such action.

It refused, he said.

UNLIMITED LIABILITY

Now, however, because of the court's decision, he said, "what was formerly only a remote possibility and of relative limited liability, now may well be a very real probability with unlimited and unforeseeable liability."

Arnebergh said it would appear "only logical" that the airlines should at least be jointly liable for any nuisances arising from operation of their aircraft.

But even if that is correct, he pointed out, the city would still have potential liability far beyond its ability to pay.

Arnebergh emphasized that federal courts have held that the federal government has complete control over aircraft operations, but despite that the California court has apparently held that the airport operator has responsibility for any nuisance.

Arnebergh maintained that the city should not be held liable for noise or other alleged nuisance since "it has no control over who uses its landing strips, the type of planes flown, the flight patterns used, the number of planes landing, nor how the planes are flown."

Arnebergh held out the hope that the city would be enjoined from closing the airport by court action.

If so, he said, the litigation then should resolve the question whether aircraft operators and builders, the federal government "which certifies and controls aircraft use" or the city which "merely provides landing strips . . . is liable for whatever . . . damages for nuisances result from aircraft use."

Arnebergh also recommended that the city immediately endeavor to obtain legislation clarifying the question of whether a government agency in California is liable for nuisance.

He said it has been "assumed" for several years that the legislature had granted immunity to government agencies.

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WOULD CLOSE AIRPORT IF NEEDED, MANAGER SAYS—ALL ASPECTS WOULD BE SCRUTINIZED, COMMISSION TOLD

(By Marvin Miles)

Clifton A. Moore, general manager of the Department of Airports, said Wednesday he will not hesitate to recommend closure of Los Angeles International Airport if such action seems warranted.

However, all of the aspects of closure must be carefully scrutinized to avoid any precipitous move, he told the Board of Airport Commissioners a day after shutdown of the

field was suggested as a possibility by City Atty. Roger Arnebergh.

Arnebergh said Tuesday the airport should be closed within 30 days unless the airlines and the federal government agree to protect the city from nuisance noise claims he estimated could eventually cost taxpayers more than $10 billion.

The city attorney modified his 30-day suggestion Wednesday, however, to 60 or 90 days, explaining he used 30 days to emphasize the gravity of the situation.

DECISION ON NUISANCE CLAIMS

Arnebergh's report to Mayor Sam Yorty and the City Council followed a landmark decision by the California Supreme Court Saturday that held property owners may sue for damage on nuisance claims of noise, fumes and vibrations caused by city-owned airports.

Suits seeking almost $4 billion already are pending against the city, he said, despite the fact that the airport is in the middle, so to speak and not responsible for the noise made by airliners, the patterns they fly, their certification or the design of the engines.

In discussing the city attorney's surprise move with the Board of Airport Commissioners Wednesday, Moore recommended no action be taken on Arnebergh's suggestion until he and his staff complete a thorough investigation of all the ramifications involved in closure.

"I feel," he added, "that there are broader considerations than those contained in the legal report. All the consequences of closure must be carefully scrutinized before any move could be made in this very, very serious area."

AIRPORT'S ECONOMIC IMPACT

"I do not have to point out to this board," he said, "the vast economic impact of International and the tremendous number of people who depend on it for a livelihood."

At Moore's request the commissioners voted to ask the City Council to request emergency clarification from the State Legislature on the question of city immunity from nuisance litigation.

Almost within the hour, on motion of Councilman Donald D. Lorenzen, Council President John S. Gibson referred the request to the State, County and Federal Affairs Committee and the Industry and Transportation Committee which will meet jointly at 9 a.m. today.

They are expected to report back to the council late this morning their recommendations on the move by Lorenzen that the Legislature should move promptly to amend the state Public Liability Act and make cities immune to nuisance litigation.

Meanwhile the Air Transport Assn., an organization of U.S. scheduled airlines, emphasized the carriers are firmly committed to fulfilling their public responsibility to provide air service to International: "Under federal authority the carriers are required to serve Los Angeles through International Airport, the only facility capable of providing vital air transportation sufficient to meet the needs of 7 million people in the Los Angeles basin.

"The location of International Airport and the establishment of its runways have been determined not by the airlines, but by the city of Los Angeles, and the airlines have no choice but to use the existing airport and its runways in fulfillment of the duties to the public.

"A constructive solution . . . would not be enhanced by closing the airport, thereby imposing grave hardships on the traveling public, disrupting the economy of Southern California and seriously impairing the national air transportation system."

QUIETER JET ENGINES

Mr. BROOKE. Mr. President, 10 million Americans regularly suffer the persistent bombardment of aircraft engine noise. Their concern has now increased to the point that they are bringing suit to curtail this annoyance.

Congress first took action to demonstrate its concern with the problem in 1968 when it amended the Federal Aviation Administration Act in order to give the FAA authority to regulate aircraft noise. The Senate report calling for passage of the bill noted that:

> The jet aircraft has imposed undesirable incidental effects on the environment—in this case noise and concluded that with the technological and regulatory means now at hand, it is possible to reduce both the level and impact of aircraft noise.

The fact is, however, that there has been no significant noise reduction since 1968 and, in many areas, there has been an increase as the amount of air service continues to expand. Although the new generation of airplanes—including the 747, DC–10 and L–1011—are noticeably quieter than the earlier jets, FAA has not yet imposed any regulation on the airlines to compel a reduction in noise.

I recognize, of course, that the regulators can move no faster than the state of the art will permit. However, I strongly maintain that we should give the scientists and engineers every possible opportunity to develop a quieter jet engine at the earliest possible date.

The FAA is currently in the midst of a $21 million research and development program to develop a jet exhaust acoustical treatment program. According to preliminary studies, this improvement would reduce jet noise by approximately 50 percent.

More recently, however, the NASA office of Aeronautics and Space Technology has initiated work on a joint program with the Department of Transportation that would result in an even greater noise reduction. This program would replace the existing fan in the aircraft engine with a modern fan that would extract more of the available energy from the turbine. The effect of this improvement would be to increase the thrust of the engine while decreasing the noise. Preliminary noise estimates indicate a reduction in takeoff and landing noise of greater than 75 percent.

I applaud the Administration for developing these progressive programs that will substantially reduce the level of noise around our Nation's airports. It is to the credit of NASA, DOT, and the White House that they have taken action on this problem that has existed for more than a decade.

I also commend the members of the Senate Committee on Aeronautical and Space Sciences for offering an amendment to provide $30 million for this NASA program in the current budget. The committee report originally recommended an expenditure of only $9 million. Consequently, I had intended to offer an amendment raising the amount authorized for this program to the $50 million contained in the House bill. However, I am gratified that the members of the committee have recognized the urgency of the situation and have, accordingly, offered the amendment for greater funding.

According to NASA projections, the combined FAA and NASA program will permit the first delivery of a quieter jet engine by the end of 1975. Although this is still a long 3 years away for the many suffering citizens who live and work around our Nation's airports, I am convinced that both the Congress and the executive branch are taking every possible step to meet the scheduled completion of this program.

In particular, I am hopeful that the Congress will once again turn its attention to the separate question of financing the retrofit program. I have introduced S. 2398, which calls for increases in the head tax and freight tax for air users. My colleague Senator CRANSTON of California has introduced legislation that would finance a retrofit program through the guaranteed loan approach. Others have suggested other forms of tax incentives for the airlines, or simply rate increases.

We must resolve this financing program, perhaps by taking parts from several proposals. When the time comes that the technology is available to develop a quieter engine, then there must also be both a mandate from the Government that the retrofitting should begin, and the funds available to pay for this important program.

Mr. President, the aircraft noise situation is a highly critical one in communities across our Nation. It is clear that unless we resolve the problem, we will be unable to build the new expanded airport facilities which will be needed in the 1980's if we are to maintain our economic strength.

I believe that the amendment which the members of the Space Committee have offered today will be viewed as a vital step on the road to quieter jet airplanes. I commend them for their action, and I urge the Senate to approve the committee amendment.

Mr. SYMINGTON. Mr. President, I support the committee amendment to add $24 million to the NASA budget for aeronautical research and technology.

I think the committee made the correct move in approving the NASA request for the development of the so-called front fan retrofit kit, even if this represents somewhat of a departure from previous NASA aeronautical programs. I also think that, having received additional facts about this program since the committee markup, it is appropriate to recommend the authorization of these additional funds so that the R. & D. on the retrofit kit can be completed in a shorter time.

The FAA, of course, will have the ultimate responsibility to certificate this development and, after proper investigation, propose the necessary rulemaking that would allow our current fleets of narrow-bodied jets to operate at substantially lower noise levels than at the present time. Furthermore, although installation costs will be considerable, these retrofited engines will operate at a substantial reduction in fuel and, therefore, at reduced costs. This fact alone should make this a welcome development to the airlines and the air traveling public instead of a bitter pill

to swallow since there is a good possibility that this could be accomplished without any increase in fares.

Mr. President, I urge Senators to support the committee amendment.

Mr. CANNON. Mr. President, I am prepared to yield back the remainder of my time.

Mr. CURTIS. I yield back the remainder of my time.

The PRESIDING OFFICER (Mr. CHILES). All remaining time having been yielded back, the question is on agreeing to the amendment of the Senator from Nevada.

The amendment was agreed to.

The PRESIDING OFFICER. The bill is open to further amendment.

Mr. CANNON. Mr. President, I suggest the absence of a quorum.

The PRESIDING OFFICER. The clerk will call the roll.

The second assistant legislative clerk proceeded to call the roll.

Mr. CANNON. Mr. President, I ask unanimous consent that the order for the quorum call be rescinded.

The PRESIDING OFFICER (Mr. CHILES). Without objection, it is so ordered.

## MESSAGE FROM THE PRESIDENT

A message in writing from the President of the United States, submitting a nomination, was communicated to the Senate by Mr. Leonard, one of his secretaries.

## EXECUTIVE MESSAGE REFERRED

As in executive session, the Presiding Officer (Mr. CHILES) laid before the Senate a message from the President of the United States submitting the nomination of Ashton C. Barrett, of Mississippi, to be a Federal Maritime Commissioner, which was referred to the Committee on Commerce.

## NATIONAL AERONAUTICS AND SPACE ADMINISTRATION AUTHORIZATION, 1973

The Senate continued with the consideration of the bill (H.R. 14070) to authorize appropriations to the National Aeronautics and Space Administration for research and development, construction of facilities, and research and program management, and for other purposes.

Mr. MONDALE. Mr. President, I call up the amendment sponsored by myself, the Senator from New York (Mr. JAVITS) and the Senator from Wisconsin (Mr. PROXMIRE) to H.R. 14070, the NASA authorization bill, and ask unanimous consent that its reading be dispensed with.

The PRESIDING OFFICER. Without objection, it is so ordered; and, without objection, the amendment will be printed in the RECORD at this point.

The text of the amendment is as follows:

On page 12, line 10, insert the following: Strike "1,094,200,000" and insert in lieu thereof "894,200,000".

On page 14, beginning with line 3, strike out through page 15, line 3.

At the end of the bill, add the following new section:

"SEC. 8. None of the funds authorized to be appropriated under this Act shall be available for design and development of the space shuttle and for space shuttle facilities."

Mr. ROBERT C. BYRD. Mr. President, will the Senator from Minnesota yield for a question? This question may have already been asked while I was off the floor, but is it possible, may I ask the distinguished Senator, so that all Senators on both sides of the aisle may be alerted—is it possible, may I ask the Senator and the manager of the bill, that the Senate could vote on this amendment by, say, 2 p.m. today?

Mr. MONDALE. I should like to accommodate the acting majority leader. My only problem is, in agreeing to that, there are several other cosponsors, including the Senator from New York (Mr. JAVITS) and the Senator from Wisconsin (Mr. PROXMIRE), who may wish to speak. Therefore, I am reluctant to agree to that time limitation until I know what their desires are.

Mr. ROBERT C. BYRD. I am not proposing a time limitation, may I say to the distinguished Senator. I am merely asking what the prospects are, so that all Senators may be alerted to the possibility of a rollcall vote on the amendment prior to a report by the majority leader on his visit to China.

Mr. MONDALE. Permit me to say that I think there is a possibility. I am not sure, until I talk to the cosponsors how bright that possibility is.

Mr. CANNON. Mr. President, I would say, so far as I am concerned, that there would be a possibility, because I do not anticipate that I will use more than 10 minutes and the distinguished opponents would not use more than 45 minutes, so that it is quite possible we could do that. But, as the Senator from West Virginia just said, we have no time limit to consider there.

Mr. ROBERT C. BYRD. I believe that the distinguished Senator has answered my question. The distinguished majority leader has indicated that he would be willing to delay his report for a few minutes if it were possible, prior thereto, to reach a vote on the pending amendment, so that all Senators may be apprised through the two cloakrooms of that possibility.

I thank the Senator very much for yielding to me.

Mr. MONDALE. Mr. President, before I begin my remarks, permit me to say how much I appreciate the courtesy and respect accorded me, and those of us who favor this amendment, to strike the authorization for the space shuttle, by the distinguished chairman of the committee. For some years, it was my privilege and honor to serve under the gifted leadership of the distinguished Senator from New Mexico (Mr. ANDERSON). I have found him to be a man not only of brilliance but also of high public devotion.

Throughout this rather uncomfortable period of the past few years, when I have found it necessary to disagree with the committee in terms of the authorization for this space shuttle, I must say that on every occasion the Senator from New Mexico (Mr. ANDERSON) has treated me with respect, with great courtesy, and great generosity. Thus, I cannot refrain from expressing my profound admiration for his leadership and my appreciation for being able to work with him on this matter.

Mr. President, the amendment which we propose would delete $227.9 million from this authorization. Of this amount $200 million is for development of the space shuttle; $27.9 million is for space shuttle facilities.

There has been significant criticism of the space shuttle in the scientific community. The Space Science Board of the National Academy of Sciences, the Federation of American Scientists, and many independent space scientists have expressed strong reservations about the wisdom of developing the shuttle.

Mr. President, at this point, I ask unanimous consent to have printed in the RECORD at the conclusion of my remarks a report issued today by the Federation of American Scientists, strongly opposing the proposed space shuttle.

The PRESIDING OFFICER (Mr. CHILES). Without objection, it is so ordered.

(See exhibit 1.)

Mr. MONDALE. Mr. President, Dr. James Van Allen, a pioneer of the U.S. space program, has observed that a massive program like the shuttle "is far beyond the context of any existing national policy on the scope and magnitude of our activities in space during the next two decades." He estimates that a "well designed program of space applications"—including such activities as radio communications and earth reconnaissance—can be maintained by delivery into earth orbit of only about 50,000 pounds of satellites per year. It should be emphasized that 50,000 pounds is less than the capacity of one shuttle flight.

Dr. Thomas Gold—a member of the President's Science Advisory Committee and director of Cornell's center for radiophysics and space research—has also vigorously opposed the shuttle's development. In testimony submitted to the Senate Committee on Aeronautical and Space Sciences, he stated:

If we were certain that we wanted a large continuous manned earth orbital program throughout the 1980's then it would be easier, despite the great uncertainties, to justify the development costs of the Shuttle. But the case for such a program is weak. It cannot be justified for applications purposes nor for science . . . For unmanned, instrumented flight purposes, such as is required for applications programs and for space science, the economic advantage of the Shuttle is very doubtful.

And perhaps most significant, the Space Science Board of the National Academy of Sciences has also expressed skepticism about the shuttle. In a 1971 report entitled "Priorities for Space Research, 1971–80," this Board made the following observation on the proposed development of the shuttle and station:

The absence of recommendations concerning the shuttle and space station should also be noted. These were considered as vehicles for the support of science, but we found the concepts too vaguely defined with respect to costs and engineering difficulties to permit any realistic assessment of the potential values to scientific research and applications. Nor was the Study able to evaluate the economics of the shuttle, because it depends so strongly on the volume of space traffic, which

in turn is dependent upon many user activities besides those included in the present frame of reference. *It is clear that space science and applications by themselves are insufficient to justify the cost of developing the shuttle.* (Emphasis added)

Other experts outside the scientific community have also expressed reservations about the shuttle. For example, Peter N. James—a former space-system analyst at Pratt & Whitney, with extensive experience in planning and analyzing the shuttle and other aerospace projects—observed in a recent article that the—

Space shuttle program as currently conceived by NASA is not in our national interest. NASA's space shuttle expenditures thus far run into the millions of dollars and a good percentage of these expenditures has been wasted because of poor planning and impatience to get the program under way. There is no evidence to indicate that things will improve, while there is supporting evidence to indicate things are getting worse.

Mr. James believes that congressional approval of the shuttle at this point will contribute to "one of the most wasteful and poorly planned, dead-ended multibillion-dollar space age boondoggles of this century." This is a statement by a top space analyst who was fired by Pratt & Whitney. Perhaps they read the article.

I believe, therefore, that there is a compelling case for rejecting—or at the very least, postponing—Senate authorization of any further funds for development of the space shuttle. The case against the shuttle centers on; first, its concealed and burgeoning costs, and second, the absence of any clear-cut policy to justify or guide such a massive expenditure.

Mr. President, I intend to concentrate on those two matters this afternoon—the shuttle's real cost and the absence of any clear-cut policy to guide such a massive expenditure.

THE SHUTTLE'S REAL COST

The shuttle will require a large and expanding commitment of limited Federal resources. The $227.9 million for the shuttle requested by NASA for fiscal year 1973 is merely the tip of a multibillion-dollar iceberg. According to NASA's own latest estimates, the total development and investment costs for this transportation system are $8 billion.

It should be noted that this $8 billion figure includes the space tug—an $800 million vehicle which NASA concedes is an essential future element of the total space transportation system. Despite NASA's admission that many shuttle missions will depend on the space tug, the Agency has consistently omitted this item in its public statements on the shuttle's development cost.

This $8 billion estimate assumes that the actual development and procurement cost of an extremely complex technological program like the shuttle can be accurately predicted. Yet in light of the enormous cost overruns experienced in almost every large-scale aerospace and defense project, there is no basis for such an optimistic assumption. It is quite likely, then, that the ultimate development and procurement costs of the shuttle will greatly exceed $8 billion.

And even without any cost overruns, this estimate is still deceptive, since it does not include the sizeable cost of the projected shuttle payloads or its actual operating costs. Thus, the most recent Mathematica report—a study funded by NASA, which NASA relies on to justify the shuttle—estimates that the shuttle's total program cost over a 12-year period will be $35 billion—which makes this program far more expensive than Apollo.

My figure is a Mathematica figure based upon the data supplied to them by NASA and NASA contractors. We continue to hear the $5 billion figure. In fact, the total program cost over a 12-year period of operations is $35 billion.

It should be emphasized, moreover, that this $35 billion figure still does not include the multibillion-dollar cost of developing a permanent manned station to be placed in earth orbit. Because the shuttle is inevitably linked to the eventual development of such a space station, the complete cost of this program—assuming no cost overruns—will approach $40 billion.

This is a program which is almost double the cost of the moon program.

Not surprisingly, NASA and the administration have tried to obscure the real cost implications of this program. Instead of openly focusing the debate on these costs, they have consistently made misleading claims that the shuttle will greatly reduce the cost of space transportation to earth orbit.

For example, in his January 5, 1972 statement on the shuttle, President Nixon claimed that the shuttle "may bring operating costs down as low as one-tenth of those of present launch vehicles." On that same date, Dr. Fletcher, the NASA Administrator, was more specific about the shuttle's capability for reducing space transportation costs: "It is estimated," he stated, "that the reusable space shuttle will reduce the cost per pound of putting a payload into space from $600 and $700 (using existing expendable boosters) to $100." And Dr. Myers, NASA's Associate Administrator, testified last year that the cost might be reduced to as low as $75 per pound of payload.

These statements are grossly and, I think, consciously misleading. They are put out by NASA without any basis. And they have been fed to the American newsmen and have been used in debates on this floor and on the House floor. They are a consistent part of NASA's case for the space shuttle. I say that that figure is totally and outrageously without justification. It is a false and misleading figure which NASA continues to advance without any effort to honestly justify it. I do not think it can be justified. Nevertheless, practically every day they put it out in one form or another.

What are the facts? What will it cost? Does it reduce or increase the cost? Unchallenged testimony by Dr. Ralph Lapp, one of our most prominent scientists, an independent witness before the Senate Space committee, concluded that at the very least, every pound put into orbit by the space shuttle will cost $2,250 per pound.

As Dr. Lapp pointed out in his testimony before the Senate Space Committee on April 12, 1972, there is no basis in fact for these extravagant claims. Using the data supplied in the 1972 Mathematica report, Dr. Lapp concluded that at the very least, every pound put into orbit by the shuttle will cost $2,250—which is three times more expensive than the transportation costs of existing launch vehicles.

Here is how Dr. Lapp reached his conclusion:

Mathematica, Inc. . . . estimates the Launch Vehicle (LV) costs for 514 shuttle flights as $12.0 billion. Dr. Fletcher in his February testimony updated this figure to $13.1 billion. This amounts to $22.5 million per Shuttle flight.

Mathematica, Inc. (Vol. 11 page 6–42) states: "As it turns out, the actual loading of the Space Shuttle Systems in terms of satellite payload weight comes to about 5,000 pounds on the average (not the 40,000 pounds theoretically available." Thus, a total of 514 Shuttle flights equals a total of 2.6 million pounds of orbital payload.

If we divide $25.5 million by 5,000 pounds, we get a unit price of $5,100 per pound placed in orbit. This, I maintain, is the true price since it is based on full accounting of all new appropriated dollars for the space program transportation system. However, proponents of the Shuttle may argue that they refer their unit prices only to operating costs without figuring in research, development, test and engineering and shuttle investment. Well, that isn't the way General Motors figures it when I buy a car, but even if we look at operating costs the unit price is nowhere near President Nixon's goal.

Although operating costs for the latest configuration of the Space Shuttle are undergoing almost monthly revision, the latest figure I find is that of $10.5 million per shuttle flight. This figure is, in my opinion, a highly optimistic one since it assumes that the solid rocket motor (SRM) cases will be used as many as 20 times. Inferior multiple use of the booster could double the unit operating cost. However, accepting the $10.5 million statistic and dividing by 5,000 pounds yields $2,250 per pound placed in orbit. Thus even on this lowest Shuttle cost basis, the unit cost is triple that specified by Dr. Fletcher for conventional expendable rockets.

Dr. Lapp estimates it will cost $2,250 to put every pound into orbit using the space shuttle. This is based on the lowest possible cost estimates.

Mr. President, I ask unanimous consent that Dr. Lapp's testimony be printed at this point in the RECORD.

There being no objection, the testimony was ordered to be printed in the RECORD, as follows:

STATEMENT ON THE SPACE SHUTTLE SYSTEM

(By Dr. Ralph E. Lapp)

I appreciate this opportunity to testify in opposition to the proposed Space Transportation System known as the Space Shuttle. While the views I express are my own, I have consulted with a number of space scientists in preparing my testimony. A number of scientists are manifesting a growing interest in "adversary science and technology"—this being a movement which, in my opinion, is an attempt to exercise a set of checks and balances on the unprecedented activities of research and development. The Space Shuttle is an example of a complex and highly costly technology which is difficult for the layman to comprehend. A number of adversary scientists are attempting to interpret such technological issues free from the bias of the promoter's eye.

1. President Nixon made a statement on the Space Shuttle on Jan. 5, 1972 in which he stressed the economies of the Shuttle in these words:

"The new system will differ radically from all existing booster systems, in that most of the new system will be recovered and used again and again—up to 100 times. The resulting economies may bring operating costs down as low as one-tenth of those of present launch vehicles."

2. The layman would be justified in welcoming such a ten-fold reduction in space economy IF it is achievable and IF transportation costs are indeed the prime determinant of space costs. I believe that the data I shall present demonstrate that:

(A) Space Shuttle transportation costs cannot achieve their advertised rates, and

(B) Transportation is not the cost-driver of the unmanned space program.

3. To make specific the projection of Shuttle transportation costs, I quote from Dr. Fletcher's Jan. 5, 1972 White House statement: "It is estimated that the reusable space shuttle will reduce the cost per pound of putting a payload into space from between $600 and $700 to $100." NASA Associate Administrator Dale D. Myers testified last year that the cost might be reduced to "as low as $75 per pound of payload." Aerospace industry officials (House hearings, Science and Astronautics Comte, FY '72 Pt II, page 482) have projected costs as low as $50 per pound.

4. NASA's case for the economy of the Space Shuttle is tied to the report "Economic Analysis of the Space Shuttle System" by Mathematica, Inc., a NASA contractor. The Committee has asked me to be prepared to comment on the 1972 Mathematica, Inc. report and on March 13th forwarded the 4 volume report to me. I am happy to respond to this request.

5. Mathematica, Inc. (Executive Summary dated Jan. 31, 1972, page 0–8) estimates the Launch Vehicle (LV) costs for 514 Shuttle flights as $12.0 billion. Dr. Fletcher in his February testimony updated this figure to $13.1 billion. This amounts to *$25.5 million per Shuttle flight.*

6. Mathematica, Inc. (Vol. II page 6–42) states: "As it turns out, the actual loading of the Space Shuttle Systems in terms of *satellite payload weight* comes to about 5,000 pounds on the average (*not* the 40,000 pounds theoretically available)." Thus a total of 514 Shuttle flights equals a total of *2.6 million pounds of orbital payload.*

7. If we divide $25.5 million by 5,000 pounds, we get a unit price of $5,100 per pound place in orbit. This, I maintain, is the true price since it is based on full accounting of all new appropriated dollars for the space program transportation system. However, proponents of the Shuttle may argue that they refer their unit prices *only* to operating costs without figuring in research, development, test and engineering and shuttle investment. Well, that isn't the way General Motors figures it when I buy a car, but even if we look at operating costs the unit price is nowhere near President Nixon's goal.

8. Although operating costs for the latest configuration of the Space Shuttle are undergoing almost monthly revision, the latest figure I find is that of $10.5 million per Shuttle flight. This figure is, in my opinion, a highly optimistic one since it assumes that the solid rocket motor (SRM) cases will be used as many as 20 times. Inferior multiple use of the booster could double the unit operating cost. However, accepting the $10.5 million statistic and dividing by 5,000 pounds yields *$2,250 per pound placed in orbit.* Thus even on this lowest Shuttle cost basis, the unit cost is triple that specified by Dr. Fletcher for conventional expendable rockets.

9. It appears to me that someone has sadly misinformed the White House on the costs of the Shuttle and, as a result, the American taxpayers have been misled into thinking they are getting some kind of a space bargain. Quite the contrary, the *Space Shuttle will,* according to NASA's own numbers, *be more expensive* than a *variety of launch vehicles which NASA now uses.* I refer to data given on page 389 of this Committee's FY 72 Authorization Hearing, Part I. I believe that adversary science serves the citizen-taxpayer well when it forces NASA to face facts which compel a realistic assessment of the Shuttle.

10. Since Mathematica, Inc. (1972 Executive Summary, pg 0–1) makes as its *primary conclusion*: (Emphasis, Mathematica's)

The development of a space shuttle system is economically feasible assuming a level of space activity equal to the average of the United States unmanned program of the last eight years.

I believe it is pertinent to tabulate the *actual* NASA launch vehicle procurement costs for the FY 1964–1971 period, for unmanned missions:

| Fiscal year | Leave procurement costs (millions) | Percent of NASA budget |
|---|---|---|
| 1964 | $129.8 | 3.0 |
| 1965 | 154.4 | 3.0 |
| 1966 | 177.6 | 3.0 |
| 1967 | 117.6 | 2.2 |
| 1968 | 124.5 | 2.6 |
| 1969 | 96.9 | 2.4 |
| 1970 | 107.8 | 3.0 |
| 1971 | 124.9 | 3.7 |
| 1964–71 total | 1,033.5 | 2.9 |

Total LV development costs are $631 million.

I think it is very clear that in the past 8 year period launch vehicle costs for NASA have been a very small part of its budget. Yet a layman reading the Mathematica, Inc. primary conclusion cited above would be led to conclude that the Space Shuttle would be economic for unmanned NASA flights. He would, perhaps, be unaware that Mathematica, Inc. was using as its actual baseline Department of Defense (DOD) and NASA unmanned flights. This confusion of military and civil space programs persists throughout the Mathematica, Inc. report and makes difficult a realistic appraisal of the Space Shuttle in terms of the NASA program. There is also confusion injected because of a blending in of unmanned and manned space programs and an abundance of assumptions which are not made clear in the Mathematica, Inc. analysis.

11. In the 1964–71 period U.S. Navy and Air Force space missions dominated the U.S. space activity. To the best of my knowledge there were 369 space missions conducted by DOD. Payloads tended to be heavier than NASA's with emerging dependence upon Titan III–C space vehicles, whereas the NASA total of some 150 space launches employed smaller LVs such as Scout and Delta. Defense spending amounted to about $14 billion over the past 8 year period. Therefore any comparison by Mathematica, Inc. of this period for Shuttle versus Current Expendable LVs is necessarily heavily weighted in the direction of defense missions. If the Space Shuttle is intended to be a military vehicle, then I submit it ought to be justified and funded by the Department of Defense.

12. It is pertinent to note that during recent years NASA payloads have averaged just slightly under 1,000 pounds. Mathematica, Inc. has projected an average of 5,000 pounds per Shuttle mission. This means two things: first, averaging in defense payloads which have been heavier than NASA's and second, programing larger and heavier payloads for NASA missions. Thus, the Mathematica, Inc. projections call for increased space activity, as measured by payloads, but the rationale for the Space Shuttle seems to be that it is a cheaper means of space transportation. This requires that we focus attention on the real cost-driver of the space program—the cost of the payloads.

13. In order to pinpoint this discussion—and to comply with the Committee's request that I make my testimony responsive to the Mathematica, Inc. 1972 report, I am reproducing from page 0–8 of the Executive Summary Table 0.1 Space Transportation Systems Cost Summary [1] Source: Adapted from Aerospace corporation and Contractor Data. Modified NASA and DoD Baseline, 514 Space Shuttle Flights (1979–1990)

TABLE 0.1

[In millions of dollars]

| | Current expendable | New expendable | Space shuttle and training |
|---|---|---|---|
| Expected launch vehicle costs: | | | |
| Non-recurring costs (fiscal year 1972–87) | 1,620 | 2,000 | 7,450 |
| Recurring costs (fiscal year 1977–80) | 10,600 | 8,760 | 4,800 |
| Total launch costs | 12,000 | 11,000 | 12,000 |
| Expected payload costs (satellites): | | | |
| Research, development, test and engineering (fiscal year 1975–90) | 11,000 | 10,600 | 9,880 |
| Recurring costs (fiscal year 1976–90) | 18,800 | 18,400 | 12,700 |
| Total payload costs | 30,000 | 29,000 | 23,000 |
| Expected total space program costs | 42,000 | 40,000 | 35,000 |

14. A quick glance at the assembled statistics might lead one to the conclusion that the Space Shuttle promises $7 billion in savings. That is the difference between program costs for current expendable launch vehicles and the shuttle costs. This is the basis on which the program is being sold. But Mathematica, Inc. projections should be carefully examined item by item to determine what assumptions they may involve. First of all, I maintain that the United States has not approved $42 billion space program in the current expendable category. Therefore, I would question the basic premise of Mathematica, Inc. in its cost projections. In order to determine just what the United States would get for such a $42 billion expenditure, I would recommend that Mathematica, Inc. or, preferably, NASA, should make a program presentation to substantiate this $42 billion figure.

15. I would like to emphasize that any comparison of Space Shuttle and current expendable space vehicles must take into account the fact that in the development of any new technology contractor estimates of systems cost are hardly reliable. RAND studies (Alvin J. Harman "A Methodology for Cost Comparison and Prediction." Aug. 1970 RM–6269–ARPA and Robert Summers "Contractor Estimate and Prediction of Actual Weapons Costs" March 1965 RM–3061–PR.) show that contractor estimates are invariably low and that actual costs exceed the estimates by 80 percent.

16. Additionally, I would stress that the Space Shuttle involves a number of significant technological risks. The degree of these risks was undoubtedly a prime factor in NASA's backing away from a full reusable manned booster. But the unmanned booster still involves risks in that the ocean recovery of a hugh 156 inch SRM case is a great extrapolation of recovery technology. The way to overcome technological risk is well known and involves parallel paths of development and improvisation—both of which add cost. It would be highly useful if NASA would per-

form sensitivity analyses on its areas of high risk and determine the costs which may be involved in these technological sectors.

17. Focusing attention on Col. 1 of Table 0.1, I do not see why *any* funds are included for non-recurring costs of current expendable vehicles. These vehicles are already developed and their costs have been paid. The $1.62 billion listed actually involves $267 million for RDT&E and investment of Titan IIIB/D/M and $550 million plus $800 million for Big Gemini. This is scarcely fair to include these costs under the "current expendable" category. Therefore, I would strike this $1.62 billion from the column.

18. As for recurring costs of current expendable launchers, I note first that this $10.6 billion figure includes $2.15 billion for Big G. There is also $0.25 billion for Intermediate 21 and since Mathematica, Inc. states (Vol. II, p. 5–16) that: "Based on the very limited flexibility and applicability of this vehicle it is quite unlikely that it will be used in the 1980s." I would strike this from the column. Since Big G *and* the Shuttle are redundant I would suggest subtracting the $2.35 billion total from the $10.6 billion leaving a residual *$8.25 billion* which then becomes the *total* launch costs rather than the $12.0 billion figure. This is a "saving" of $3.75 billion and involves no diminution of the unmanned NASA or DOD program.

19. Looking now at the expected payload costs under Column 1 of Table 0.1 I suggest that the proper way to proceed to analyze this expenditure of $30 billion is to set down the complete list of missions and their individual costs so that a rational decision may be made on the program. I note that Mathematica, Inc. (Vol. II Table 6.21 p. 6–46) tabulates the OSSA payloads by cost (but not by mission) as follows:

| Payload cost range | Number of payloads | Percent of total |
|---|---|---|
| $0 to $20,000,000 | 17 | 4 |
| $20,000,000 to $40,000,000 | 242 | 61 |
| $40,000,000 to $60,000,000 | 46 | 12 |
| $60,000,000 to $80,000,000 | 17 | 4 |
| $80,000,000 to $100,000,000 | 1 | <1 |
| $100,000,000 to $120,000,000 | 22 | 6 |
| $120,000,000 to $140,000,000 | 22 | 6 |
| $140,000,000 to $160,000,000 | 11 | 3 |
| Over $160,000,000 | 20 | 5 |
| Total | 398 | 100 |

My estimate is that these nearly 400 payloads represent a $20 billion cost. I estimate that $10 billion represents 75 payloads each more than $100 million in cost. I believe that there ought to be a very critical examination of each class of mission from the standpoint of science and national priorities. I believe that the large public expenditures involved make it mandatory that mission models such as Mathematica, Inc. has used be more than NASA or NASA contractor inputs. There can be no doubt that the mission model used in Table 0.1 represents a sharp step-up in NASA space activity and that such a program change should be subjected to public examination on a programmatic basis. Furthermore, the mission model should be specifically a NASA model and not a mixed NASA–DOD model.

I note that the 398 payloads dispersed over a 15 year time span represent a biweekly launch rate for OSSA missions—more than double the present rate and that for recent years. I submit that such an increase in the tempo of the civilian space program has not been justified as a legitimate public expenditure. Therefore, I feel that the $30 billion total in this column is unrealistic and, although lacking a specific itemization of missions, I would suggest a more realistic figure would be $20 billion. Such an adjustment automatically feeds back to launch vehicle procurement and would reduce my suggested $8.25 billion figure to about $5 billion.

20. Using the new numbers of column I, I arrive at a bottom line total of $25 billion rather than the $42 billion stipulated by Mathematica, Inc. I further believe that if the scientific and technical community was given this figure as a ceiling, it would be possible to define an aggressive and rewarding space program for the 1975–1990 period.

21. Skipping Column 2 for the moment, I would like to comment on the launch vehicle and payload costs for the Space Shuttle. First, I would note that new numbers need to be inserted for LV costs. The non-recurring costs of $7.45 billion are now estimated to be $8.1 billion. Using the 1.8 factor of contractor estimate understatement (#15) this 8.1 billion figure could *escalate to $14.5 billion*. It is not necessary to provide a parallel escalation for conventional launch vehicles since their research, development, test and engineering costs have been paid.

22. The recurring costs for the Space Shuttle estimated at $4.8 billion by Mathematica, Inc. as of Jan. 31, 1972 need to be revised in the light of the hardware decisions made in March. Clearly, recurring costs will depend on the orbiter functioning properly for 100 or more times and refurbishment costs being held in line. More critical to the recurring cost total for the Shuttle is the uncertain reusability of the booster. It is highly likely that the $4.8 billion figure cited by Mathematica, Inc., will escalate considerably. Total launch costs for the Space Shuttle certainly exceed $13 billion and for the 514 flights specified in Table 0.1 it is quite possible that a *$20 billion total* might result.

23. In any event any comparison of the launch vehicle costs for current expendable LVs, which we have, and the space shuttle, which we do not have, must lead to a favorable cost margin for existing launch systems. No matter how one tries, the Space Shuttle cannot claim an economic advantage based on launch costs. I agree with Mathematica, Inc. in its conclusion (Vol. II, page 6–43): "What matters are the actual space missions performed in the 1980s and used in the economic analysis when comparing Space Shuttle Systems to expendable modes of operations. What matters most, in the economic analysis, is the cost of payloads and of space missions in the 1979–1990 period." Let us therefore look at the cost of the Shuttle payloads.

24. Table 0.1 lists $9.9 billion as R.D.T.&E. costs of Shuttle payloads or $1.1 billion less than for conventional launch vehicle payloads. It is however in the area of recurring costs that Mathematica, Inc. claims a Shuttle advantage. The 12.7 billion figure is $6.1 billion less than for conventional LV payloads.

Economies claimed for the Shuttle derive from the potential of making larger and heavier satellites which can be cheaper per pound of instrumentation. No doubt the ability to add weight to a satellite may permit less costly microminiaturization of instrumentation but this is a trade-off situation. Furthermore in making comparative costs of placing a pound of payload in orbit the Shuttle payload cannot then be compared on a 1 for 1 basis since the conventional less weighty payload is then equivalent to x pounds of Shuttle payload. This means that the $5,100 unit price per pound of payload lifted in Sec. 7 needs adjustment upwards. This means that instead of the Shuttle providing transportation for one-tenth the unit price of conventional launch vehicles, it is actually ten times more expensive. It is difficult to state how much the higher payload capacity of the Shuttle allows reduction in payload costs on a pound basis, but the trend is contrary to the thrust of technology which aims at more compact, solid-state, instrumentation of high reliability.

25. Apart from the economy of permitting bulkier instrumentation, the Space Shuttle is claimed to be economical in increasing the reliability of satellites placed in orbit by allowing man to be on board and make a final check-out of the orbital device prior to dispatch into orbit. Since many orbital devices have achieved a 95% reliability in operation, this feature of the Space Shuttle does not appear to be highly significant. Furthermore, the increasing complexity of orbital devices calls for a much greater payload of check-out devices and personnel competence at the check-out point. If the orbital device is checked out prior to launch it does not appear overly advantageous to provide a final checkout prior to orbital insertion.

26. Proponents of the Space Shuttle place greater emphasis on the capability of retrieving orbital devices, servicing them in orbit, and in bringing them back to earth for refurbishment and redeployment in orbit. Here one is faced with a trade-off situation in which the unit cost of the orbital device vs. the cost of retrieval, refurbishment and redeployment is of critical importance. As mentioned earlier, there is also the relative impact of obsolescence of the orbital device. What is also involved here is the relative advantage of a single massive orbital device vs. a number of smaller, lower-price, units. In the communications satellite field, there appears to be a trend toward smaller devices which grant greater flexibility and back-up to the deployed system. Rather than replace a malfunctioning communications satellite with the same device, retrieved and refurbished, it might be more economic to launch a new, higher-capacity, satellite. I believe that it would be very useful to solicit the views of Comsat Corporation on this matter.

Mathematica, Inc. bases its estimates of retrieval/refurbishment economies on Lockheed Missiles and Space Company (LMSC) studies. LMSC studied (NASW–2156 Contract, LMSC–A990594, June 30, 1971 "Payload Effects Analysis") three devices—OAO (Orbiting Astronomical Observatory), SEO (Synchronous Equatorial Orbiter) and SRS (Small Research Satellite). It concluded that the savings would be significant, i.e., refurbishment cost ratios of 0.32 to 0.39 for Shuttle vs conventionally launched satellites. However, there appears to be considerable uncertainty in these estimates. Since LMSC is an aerospace company which would benefit from Shuttle contracts, it is questionable whether Mathematica, Inc. is justified in accepting the LMSC data without considerable adjustment for bias. Conventionally launched satellites are not credited with much of an increase in future reliability and little attention is paid to the contest between refurbishment and technological obsolescence. It would have been highly instructive for LMSC to have performed an analysis of Comsat type satellites and to have carried out sensitivity analyses on a variety of satellites (retrieval/refurbishment as a function of age of the satellite).

The basic problem posed by the retrieval/refurbishment issue is whether or not the traffic in satellite retrieval and refurbishment justifies the development and deployment of a new space system as costly as the Shuttle. Since Mathematica, Inc. has singled out the recurring costs of Shuttle payloads as the sector of maximum "savings" i.e. "$6.1 billion" in comparing Columns 1 and 2, I suggest that a more careful study be made of this sector. I believe that it should be required that Mathematica, Inc. make a very detailed accounting of how this $6.1 billion payload "savings" is to be achieved. By this I mean specification of *all* missions as tabulated in Table 6.20 on page 6–44 of Vol. II. It will be noted that in this tabulation, Mathematica, Inc. postulates:

| | New satellites deployed | Refurbished satellites deployed | On-orbit maintenance/refurbishment | Flights to space station |
|---|---|---|---|---|
| Total NASA | 242 | 274 | 62 | 62 |
| Total DOD | 103 | 302 | (1) | (2) |
| Total | 345 | 576 | 62+ | 62+ |

[1] Some.
[2] Not available.

Obviously, Mathematica, Inc., foresees a flourishing business in refurbishment of sick or aging satellites. I suggest that the uncertainties of Shuttle costs, technological issues, mission models and booster reuse do not now permit a 1978–1990 projection such as Mathematica, Inc. has made—or, to put it another way, do not permit public confidence in the projection.

27. I call to your attention the fact that Mathematica, Inc. has listed a minimum of 62 flights to Space Station. I also note that the most recent NASA estimate of the cost of such a Space Station development/deployment is $6 billion and that much higher figures have been suggested. If Mathematica, Inc. is going to include earth-to-Space Station flights in its mission model then it should provide for this expenditure under Shuttle payload costs. This inclusion of the Space Station in its mission model makes it clear that buying the Space Shuttle means we are also buying the Space Station.

28. I believe that the foregoing commentary makes it clear that the total payload costs associated with the Shuttle system will not be $23 billion, but will be considerably higher and would probably approach the $30 billion figure cited for the conventional payloads. I have suggested in Sec. 19 that the latter could be $20 billion.

29. If we now consider the "bottom line" totals for conventional and Shuttle program costs, the $42 billion figure (Col. 1) for conventional launch vehicles shrinks to $25 billion (Sec. 20) while the $35 billion Shuttle total may in fact soar to over $44 billion. In other words, *instead of "saving" $7 billion the Shuttle could actually "cost" us $19 billion more for the U.S. space program.*

30. It seems to me that we can put space spending in better perspective if we translate the billion dollar totals into specific costs per pound. This was done by President Nixon in his Jan. 5th message for costs of transportation. I suggest we do the same thing for costs per pound of satellite payload. For example, if we accept the $23 billion total for Shuttle payload costs given by Mathematica, Inc. (which includes a large credit for satellite reuse) and use the 2.6 million pound orbital payload (Sec. 6) postulated by Mathematica, Inc. we arrive at an *average cost of $8,800 per pound of payload.*

Expressed in other units, *Shuttle payloads will average $550 per ounce.* Thus *Shuttle payloads will average ten times more expensive than their weight in solid gold.*

31. In proceeding to discuss Shuttle costs we jumped from Col. 1 to 3 without consideration of Col. 2, the "New Expendable" category. Referring back to Table 0.1 (Sec. 13) Mathematica, Inc. figures for this category is $1 billion less for total launch costs than for either the conventional or Shuttle launch vehicles. Payload costs are $1 billion less than for conventional LVs and $6 billion more than for Shuttle payloads. It seems to me that Mathematica, Inc. and NASA have skipped over a very important potential cost-saver in space activity. In as much as NASA has opted to recover the massive twin rocket motor cases for the Shuttle booster, it would seem to me completely logical that NASA apply the same degree of optimism to recoverability and refurbishment of Titan-class launch vehicles.

Thus I would recommend that NASA examine the possibility of new launch vehicles of the non-shuttle class. In this examination, I would recommend that an attempt be made to standardize on a launch vehicle so that unit costs can be reduced.

32. In summary, I conclude that the NASA and NASA-contractor basis for the Space Shuttle is inadequate and that the entire issue of launch vehicle choices for the future space program should be restudied. I believe that I have shown remarkable deviations in the cost estimates of NASA and NASA contractors for comparative launch systems.

I appreciate this opportunity to have presented an adversary view of the Space Shuttle System.

Mr. MONDALE. Mr. President, I ask unanimous consent that a letter I received today from Dr. Lapp under date of May 11, 1972, be printed at this point in the RECORD.

There being no objection, the letter was ordered to be printed in the RECORD, as follows:

MAY 11, 1972.

Senator WALTER F. MONDALE,
*U.S. Senate,*
*Washington, D.C.*

DEAR SENATOR MONDALE: I am deeply grateful for your inserting my analysis of the Space Shuttle into the *Congressional Record.* It has produced results which are most gratifying to an adversary scientist whose basic mission in contesting the assembled might of a $3 billion-a-year government agency must be that of provoking reply. I believe that lawyers refer to this process as *discovery.*

I also appreciate the courtesy of the NASA contractor, Mathematica, Inc., of Princeton, N.J., in replying to my analysis in the May 5th *Congr. Rec.* (pages S 7367–7373). As a result of Mathematica Inc., reply, many things come to light which have previously been implicit in NASA and NASA contractor assessment of the Space Shuttle. We now learn some of the assumptions which NASA contractors like Lockheed and Aerospace Corp. have been making about the economics of the new Space Transportation System. Much has also come to light in the volumes of authorization hearings just released by the Senate Committee on Aeronautical and Space Sciences and by the House Committee on Science and Astronautics.

It is now quite evident that the Space Shuttle is being sold to the Congress on pseudo-economics which have been distorted to make it appear that this new transportation system is a prudent national investment which will save taxpayers billions of dollars. For example, I quote from the House bill reporting out the FY73 authorization, page 192:

"The economic savings are based on the following facts:

(a) Approximately $12 to $13 billion will be saved from 1978–1990 based on launch rates of less than 50 a year. In fact, it will be economical with as few as 20 a year."

*Comment:* This means a total flight schedule of 240 flights. Simple division shows that this means a saving of $50 million per flight! The only possible way to justify such a figure is to assume that the U.S.A. is going to authorize 240 space missions, each of which is greatly in excess of $50 million each. That's the policy the U.S. Senate should be examining. Not how much we save BUT how much we spend.

*To continue:* "(b) Of the $12 to $13 billion savings, $5 billion will be saved in launch costs."

*Comment:* Nothing is said about *how many* launches are involved in such 'savings'. If, however, we charitably assume 500 launches, then this means a saving of $10 million per launch of existing rockets. This must inevitably assume that NASA will fire nothing but super-rockets. The fact is that NASA's SCOUT rocket costs only $3 million per launch. To be sure, Saturn V costs $188 million per launch, but Congress is not authorizing such mammoth vehicles.

In case, as might be thought, NASA is ducking under a military cover and claiming that Defense Department rockets are more costly and that these are involved, allow me to cite the cost per launch of the Titan III D (data from page 1035, vol. 2 of Senate Space Au. Hrg. FY 73) is $14.7 million for injecting 24,000 pounds into a low earth orbit. Delta, a NASA workhorse rocket, is cited in the same reference as costing $5.9 million per launch vehicle.

I would point out that the above cost accounting fails to include the amortization of the $8.1 billion (not the $5.1 billion figure used in Senate hearings) capital costs of the new Shuttle. The fact is that we already have a family of workable rockets from Scout to Delta and Titan. These are in existence. Their capital costs have been paid and need not be figured in for the future. Furthermore, if they are put on a mass production basis their unit costs will decrease.

To continue: "(c) Of the $12 to $13 billion savings, $7 to $8 billion will be in design of satellites and our ability to check out and return satellites from space."

*Comment:* This is a fiction. When the NASA contractor, Mathematica, Inc., attempted to justify this payload saving (See C.R. pg. 7369) it was naive in the extreme. It accepted input data from the Lockheed and Aerospace Corp.—companies which have much at stake in winning Shuttle contracts. Mathematica's uncritical acceptance of aerospace industry inputs amounts to supine compliance with assumptions about the future of the U.S. space program. For example, it claims that a Shuttle placing Radio Explorer satellites in orbit can save $132 million, mostly in payload costs, by substituting for 9 Radio Explorers. The Shuttle sequence would use only 3 satellites, retrieve and refurbish them. To accomplish this feat, the 3 satellites of 1980 vintage are used up to 1990. Do you think any scientist in his right mind would allow 10 years to go by without completely revamping his instrument design? This is typical of the Mathematica, Inc. techno-blindness in their analyses.

Again, as I did in my testimony reproduced in the May 5th Congr. Rec. I emphasize that NASA deceives taxpayers when it speaks of a $5.1 billion Shuttle investment. It's a double deception: First, the true number is not $5.1 billion but much more. According to the Senate authorization hearing, page 207, Vol 1, the quote is: "Total development and investment, 1972–1990 (sum of Items 6a and 6b) $8.05 billion."

Now this figure neglects the following:

Any cost overruns which were allowed for in President Nixon's Jan. 5th statement on the Shuttle but since are not mentioned.

I suggest that overruns will total to more than $10 billion. *Thus the advertised price of the Shuttle as $5.1 billion is half its real investment cost.*

*To Continue:* "(d) The cost of placing a pound in space will be reduced from aproximately $800 to $4000 per pound to $120 per pound."

*Comment:* Even Mathematics, Inc. does not attempt to defend this cost accounting, claiming that the cost per pound is "meaningless" and speaks of NASA's "passion for the use of this oversimplification". I submit that NASA's passion has a purpose—it is designed to persuade Congressmen that the Shuttle is really cheap. Time cost per pound appears over and over in Congressional hearings. Until I challenged the figures it was simply accepted as true.

*To continue:* "(e) The cost of launch will be reduced to $10 to $11 million a flight."

*Comment:* This figure, now used as $10.5

million, is no where justified by NASA in its testimony. It is, however, only operations costs. There is no allowance for amortization of the Shuttle development and deployment. If this is $10 billion and there are 500 flights, it will be $20 million per flight added to $10.5 million or $30.5 million per flight. And, if as Mathematics, Inc. concludes the average Shuttle flight will carry a payload of 5,000 pounds, then this figures out to $6,000 per pound—or much more than existing rockets—and very much more than promised by President Nixon in his Jan. 5th announcement.

Shuttle advocates will respond by saying that the cost per pound can be achieved if it is fully loaded—65,000 pounds. Well, $30.5 million divided by 65,000 pounds is $470 a pound, but it implies something which NASA would rather not mention. Namely, that you also have to pay for 65,000 pounds of payload. That drives the whole cost of the Space program sky high since payload costs per pound are very high.

All in all, I conclude that the economics of the Space Shuttle constitute a spacious basis for investment of so much money in a technological venture.

RALPH E. LAPP.

Mr. MONDALE. Based on NASA's own data, this analysis conclusively demonstrates that the shuttle cannot achieve the savings in space transportation costs claimed by NASA and the administration.

In fact, as Dr. Lapp observed, "the space shuttle will, according to NASA's own numbers, be more expensive than a variety of launch vehicles which NASA now uses."

NASA's own contractor, Mathematica, Inc., accused NASA "of a rather naive oversimplification of the economic case for the space shuttle by quoting numbers such as $100 per pound for the cost of putting a payload into orbit using the space shuttle." Mathematica regretted "NASA's passion for the use of this oversimplification." Mr. President, this is a criticism by a NASA contractor paid to analyze the economics of the shuttle.

NASA's deception about the reduction of costs to "$100 per pound" is no minor detail. It has been fed to both the press and the Congress as a major selling point for the shuttle. The recent House debate on the shuttle emphasized this claim. Newspaper, radio, and television editorials throughout the country have heavily relied on this figure—generally without attribution to NASA—in advocating the shuttle as a cost-effective investment.

Even the New York Times bought this figure. For example, in its editorial of January 8, 1972, supporting the shuttle, the New York Times stated:

> If successfully built, the reusable shuttle would cut the cost of putting a pound of matter into space from $600 or $700 to about $100 . . . Moreover post-shuttle development would almost certainly reduce the cost of putting material into space significantly below $100 a pound by the 1980's. In short, the space shuttle has the possibility of beginning for space travel what the model T Ford did for the automobile age.

Confronted with Dr. Lapp's analysis, NASA argued that its $100 per pound claim—which has lately been revised to $160 per pound—is based on the assumption that the shuttle will carry a full load of 65,000 pounds on every flight. This means that one shuttle flight could carry the total of all unmanned satellites launched by NASA over the past 5 years. Or to put it another way, under NASA's projection of 48 shuttle flights every year, the shuttle would have to carry 3.1 million pounds of payload to earth orbit every year to accomplish its alleged savings—which is almost 7 times as much as the total of all payloads—including four Apollo flights—launched by NASA in 1969, its biggest year in space.

This project led Brian O'Leary to state that apparently what NASA is planning to do is to use elephants for space animals and to put them in lead castings so that they can accomplish the type of heavy payloads needed to justify these costs.

Thus: either the shuttle will not carry 65,000 pounds per flight and will therefore cost more than existing boosters to put a pound of payload in orbit, as Dr. Lapp's analysis demonstrates, or it will carry 65,000 pounds per flight, which would mean an incredible increase in the amount of orbital payloads launched by the U.S. space program.

In either event, NASA's claims about the shuttle's reductions in transportation costs are irresponsibly misleading.

I wish to emphasize "irresponsibly misleading."

Mr. JAVITS. Mr. President, will the Senator yield?

Mr. MONDALE. I yield.

Mr. JAVITS. Mr. President, I wish to associate myself with the arguments which are being made by my colleague, the Senator from Minnesota (Mr. MONDALE), on this matter. I wish to give my reason because it may be attractive to other Senators.

I am for a space program which is level in cost, taking into account increases in cost, but which is level in that proportion of the budget it represents.

I do not believe that such large expenditures for the space shuttle program should be undertaken at a time when budgetary pressures are so great and many needed social programs are being underfunded. It is quite likely that the American people will be asked to pay increased income taxes next year. In this context it is incumbent upon the Congress to closely examine new programs which entail large expenditures to see if they can be justified.

Looking at the space shuttle program we find a great deal of conflicting opinion in the scientific community over the cost and the effectiveness of this program. We also find a lack of a clearcut objective toward which the program is to be directed. On this basis it would be improvident to proceed on a multi-billion-dollar program without further study and review.

The shuttle has been studied and approved by Mathematica, Inc. under a contract from NASA but even here the total program cost has been set at $35 billion when payload costs are included.

On the other side the Space Science Board of the National Academy of Sciences has expressed reservations about the shuttle program. The Federation of American Scientists has also expressed similar reservations. Dr. James Van Allen, one of our most notable scientists, has expressed the view that an effort to develop a space shuttle is "inappropriate to the national context of the 1970's."

Dr. Thomas Gold who is a member of the President's Science Advisory Committee and Director of Cornell University's Center for Radiophysics and Space Research is also vigorously opposed to the development of the space shuttle. He feels the case for the program is very weak and cannot be justified on the present contemplated uses of the shuttle. Dr. Ralph Lapp, the renowned scientist, has vigorously opposed the shuttle on the grounds that it will not reduce the cost of putting payloads into orbit and is not worth the large expenditures required to develop it. Finally, Peter James, a former space-systems analyst for Pratt & Whitney, has stated that the shuttle cannot be justified on the basis of its limited uses contemplated by NASA and that it should be delayed pending further study.

Thus we have seen conflicting statements by experts disputing every aspect of the shuttle. This is not a sound basis upon which to proceed with such a massive program. The Federal Government is going to be called upon to make increasingly large expenditures for social programs and I believe it is essential that we make these expenditures. A revenue-sharing bill which will call for the expenditure of $5.3 billion is expected to pass the Congress this year. Welfare reform legislation requiring an expenditure of possibly double that amount also may pass the Congress this year. We are likely to pass a higher education bill creating new grant programs that will run into billions of dollars. I believe these programs are necessary and should be funded at the appropriate levels. Therefore, we must take a hard look at programs like the space shuttle which will also cost billions of dollars and compete for funding with social programs.

The GAO is undertaking a study of the shuttle and should have its findings by June 1 of this year. I believe it is necessary to get the results of the GAO study and other studies which should be undertaken before proceeding with the shuttle program.

In light of the controversy and conflicting opinions about the advisability of proceeding with the shuttle program and our pressing social needs which must be met, I urge the Senate to support our amendment to delete the authorization of $227.9 million for the space shuttle program.

Mr. CANNON. Mr. President, will the Senator yield?

Mr. JAVITS. I shall be glad to yield to the Senator in just a moment.

Mr. CANNON. If the Senator will permit me to respond in part, the $35 billion is completely unrealistic for the estimate cost of the shuttle. It is the estimate for the total space program; it is not the estimate for the shuttle, and never has been projected as such.

Mr. MONDALE. It is based on NASA's own contractor's estimates of the total program cost: 12 years, $35 billion. I do not think there is any question about it. It is true that the NASA spending levels this year are the same as last; but they are already beginning to dig into essential scientific programs, robbing from

them to finance this space shuttle. So already they are taking from programs that have had useful purposes for this unneeded space shuttle. We are seeing shifts in NASA's priorities even at this modest start-up cost.

In addition to relying on these misleading claims, NASA rests its economic case for the shuttle on the reports of its contractors—particularly the Mathematica report. This report concluded that:

> The shuttle is economically feasible assuming a level of space activity equal to the average of the United States unmanned program of the last eight years.

The Mathematica study constructs a future scenario of 514 space missions over a 12-year period. On the basis of this scenario, it concludes that the United States will save $7 billion by using the shuttle instead of existing launch vehicles. However, this finding is based on the assumption that the United States will spend $42 billion using expendable vehicles for earth orbital missions during this 12-year period. Accepting this $42 billion program, Mathematica concludes that the shuttle's total program cost will be only $35 billion—thus, leading to the savings of $7 billion.

But the Congress has never approved such a $42 billion program. And until it does, any projections of shuttle economies based on such an escalation in future space activity are meaningless and deceptive.

Furthermore, the Mathematica report compares the development and procurement costs of existing launch vehicles—which are well defined—with NASA's estimates of the shuttle's development and procurement costs. But as Dr. Oskar Morgenstern—the chairman of the board of Mathematica—told the Senate Space Committee, all of the proposed shuttle designs have "considerable cost uncertainties" attached to them. Dr. Morgenstern continued:

> Given the advance in space transportation proposed by the space shuttle system, these cost uncertainties are prominent.

Dr. Lapp made the same point in his testimony:

> I would like to emphasize that any comparison of Space Shuttle and current expendable space vehicles must take into account the fact that in the development of any new technology contractor estimates of systems costs are hardly reliable. Rand studies (Alvin J. Harman "A Methodology for Cost Comparison and Prediction" August 1970 RM-6269-ARPA and Robert Summers "Contractor Estimate and Prediction of Actual Weapons Costs: March 1965 RM-3061-PR) show that contractor estimates are invariably low and that actual costs exceed the estimates by 80 percent.

Peter N. James, the former space-system analyst at Pratt & Whitney, was even more specific in his recent article on the shuttle:

> Predicting cost estimates only several years in advance is a very difficult task, let alone a span of almost 20 years. Modern day examples of cost over-runs include the C-5 military jumbo jet transport and the F-111 fighter aircraft. And these systems were developed only a few years ago.
>
> To justify the shuttle, however, cost estimates must show a span of approximately 20 years, due to the 7-10 year development cycle and the 10-15 year operational cycle. On a statistical basis one would expect to find just as many high cost estimates as low estimates.
>
> The record shows that aerospace cost estimates—regardless of the reasons—have characteristically been biased on the low side. Projecting costs 20 years in advance—and I've seen this done on numerous shuttle projects—is essentially equivalent to President Harry Truman in 1949 estimating the cost of landing men on the moon and bringing them back home safely in 1969; and Truman would have made his calculations based on the technology of the 1940's. In other words, while shuttle cost estimates must be made over approximately a twenty-year period, we should place these estimates in the proper context.

Mr. President, I ask unanimous consent that Mr. James' article, which appeared in the April 2, 1972 edition of the Miami Herald, be printed at this point in the RECORD.

There being no objection, the article was ordered to be printed in the RECORD, as follows:

"WE MUST REORGANIZE OR POSTPONE IT"

(By Peter N. James)

Most citizens and Congressmen are not aware that the space shuttle program is in deep technical trouble due to bizarre planning decisions by NASA officials.

Support for the program is righteously based on the idea that low cost space transportation systems must be good and we must forge ahead in space. Unfortunately, what the shuttle ideally represents and what is being offered are two different things.

Another problem area is that the public and Congress have been led to believe that "low cost transportation" means a "low cost national space program." Unfortunately these terms are not synonymous.

The space shuttle program as currently conceived by NASA is not in our national interest. NASA's space shuttle expenditures thus far run into the millions of dollars and a good percentage of these expenditures has been wasted because of poor planning and impatient to get the program under way. There is no evidence to indicate that things will improve, while there is supporting evidence to indicate things are getting worse.

The urgency to get this program under way at the risk of developing the wrong system cannot be justified. We are talking about a multi-billion dollar, 20-year program (7–10 years development and approximately 10 or more years of operation).

It is time to stop and either get reorganized or consider the project at a later date. Congressional support of this program in fiscal 1973 without advisory guidelines and restraint will endorse NASA's "sketchy" space shuttle record and in my opinion will contribute one of the most wasteful and poorly planned, dead-ended, multi-billion dollar, space age boon-doggles of the century.

By late 1970, the logic that prevailed within the industry was that the shuttle had to be sold to Congress and the public, or the future of the space industry was in jeopardy.

Official spokesmen began promoting the shuttle, hoping to convince Congress and the public that the shuttle had to be built on the grounds that it would reduce space costs.

Numerous cost studies appeared, showing the advantages of reusable shuttle-type systems over expendable systems. While most studies emphasized cost savings if a space shuttle were developed, few studies made it clear that the total annual space expenditures for this nation in the shuttle era would be considerably greater than NASA's current space expenditures.

Congressional resistance to increased space expenditures during 1970 dictated that the projected total cost of our national space program not be publicized so frequently as in the past, so as to not scare off any supporters of our space program. The emphasis was to be on cost savings, rather than on total cost. All planning to date was based on an integrated space program. Suddenly, for political expendiency officals were talking about delaying some programs, and breaking up the integrated space program concept to make it more palatable to Congress. The logic that prevailed was: Let's get the shuttle approved first, then the rest will follow. If we lose the shuttle, we lose everything anyway.

After reading the record and testimony on the U.S. space shuttle program, I concluded that members of the Senate were not given sufficient background information to intelligently assess the program.

NASA witnesses, for example, presented the official NASA Headquarters position, which did not reflect the raging controversy and serious differences in expert opinion within NASA and private industry over the shuttle program. Witnesses against the shuttle program—mostly scientists—presented information from the scientific point of view.

The missing testimony was from the aerospace engineers and systems analysts who have been studying reusable launch vehicles for almost a decade. Generally speaking, these persons cannot surface their inner feelings about the space shuttle program as currently conceived by NASA or criticize their government publicly without jeopardizing their jobs and careers.

Shuttle cost estimates: Predicting cost estimates only several years in advance is a very difficult task, let alone a span of almost 20 years. Modern day examples of cost overruns include the C–5 military jumbo jet transport and the F–111 fighter aircraft. And these systems were developed only a few years ago.

To justify the shuttle, however, cost estimates must show a span of approximately 20 years, due to the 7–10 year development cycle and the 10–15 year operational cycle. On a statistical basis one would expect to find just as many high cost estimates as low estimates.

The record shows that aerospace cost estimates—regardless of the reasons—have characteristically been biased on the low side. Projecting costs 20 years in advance—and I've seen this done on numerous shuttle projects—is essentially equivalent to President Harry Truman in 1949 estimating the cost of landing men on the moon and bringing them back home safely in 1969; and Truman would have made his calculations based on the technology of the 1940's. In other words, while shuttle cost estimates must be made over approximately a twenty-year period, we should place these estimates in the proper context.

By mid-1971 NASA had undertaken measures to make the shuttle acceptable to Congress on a dollar basis. Plans for developing a space station were deferred. The grandiose plans of an expedition to Mars, lunar orbiting space stations, lunar bases, and logistic support missions for manned space activity were shelved. These developments were construed within the engineering community as a bad planning decision by NASA. The original integrated national space program envisioned by the Space Task Group and other officials in 1969 was being dismembered. The programs that once were used to justify the shuttle during 1969 and 1970 were either cancelled or deferred. Against all cost principles, the shuttle is being presented to Congress on its own merits and tied in with payload cost savings.

The dilemma the engineering community faced was as follows: A space shuttle would probably be "cost-effective" relative to any throw-away launch vehicle if a large number of launches were required. However, if a large number of launches were required it meant that we would dramatically increase

the number of payloads launched into orbit relative to our current launch rate. Because the cost of payloads has a significant influence on the total cost of our national space program, the cost of our space program would increase dramatically.

And if people are not willing to support a costlier space program, then it would not be cost-effective to develop the space shuttle. It is impossible to launch more payloads than we are currently launching without significantly increasing annual space expenditures. In short, we know that the shuttle can only be justified if our nation commits itself to a large space program—in excess of what we are already doing. So the option for the 1970's is to either maintain a status quo without a shuttle or greatly increase space expenditures to accommodate an aggressive space program with a shuttle.

The shuttle was originally conceived as part of an integrated total national space program. Everyone agrees that low cost space transportation is needed if we are to pursue an aggressive manned and unmanned space program for the next two decades. Most shuttle design studies conducted during 1969 and 1970 proceeded on the assumption that annual space expenditures during the '70's and especialy the '80's would greatly exceed current expenditures. This assumption was necessary to justify the shuttle on an economic basis.

In other words, the cost savings from low cost space transportation systems would not reduce current annual space expenditures; they would help keep down the costs for a geratly expanded space program. The cost for a greatly expanded space program—even with low cost transportation systems—would be considerably more than we are currently spending in space, and this is mostly due to the exorbitant costs to design and develop payload. It costs $50,000 to $200,000 per pound of payload: spacecraft or satellites to be launched.

Because Congress authorizes space expenditures, the public and Congress participate in the planning of our space program. Congressmen who do not favor a greatly expanded national space program, regardless of their reasons, should vote against the shuttle. To support a shuttle program at this time and then withdraw this support at a later date, when costs escalate, would be wasteful. I would rather see this money spent on health and education than on a dead-end program.

For the space shuttle to have a chance—even if it is technically and economically feasible—it must have strong support throughout its duration. It is fairly obvious that the shuttle as presently conceived does not have this support—even within the engineering community. Unfortunately, the shuttle program has been separated from the concept of a total national space program to make it palatable to Congress. Such an approach is no longer cost effective by any stretch of the imagination.

It is worth repeating what NASA learned in 1969: "The lesson is that we need to develop our concepts of low cost transportation within the context of a total national space program rather than in the more limited context of launch vehicle and transportation alone."

For our country to develop an effective low cost space transportation system let us recognize that three conditions must be met:

"(1) The space transportation system must be an inseparable part of a total national space program.

"(2) We must plan better than we have in the past.

"(3) We must spend considerably more in space on an annual basis during the next two decades than we are currently spending."

NASA's space shuttle program does not satisfy conditions 1 and 2 above, and NASA has not made it clear to Congress and the public that condition 3 was always a prerequisite for the space shuttle to be an economic success regardless of technological considerations.

I urge Congress not to support the space shuttle program as currently conceived and propose that a one year moratorium be declared with the idea of considering the space shuttle program for fiscal 1974. As the rocket engine program for the shuttle's orbiter stage requires a long time to develop, I would recommend that it be retained as a separate entity with minimum funding until fiscal 1974, when a go-no go shuttle decision can be made.

A one-year moratorium would allow NASA to get reorganized, solve its internal differences, and start with a clean slate. It would also give our country the benefit of "in-house" studies by aerospace corporations (i.e., studies conducted at the corporation's expenses). Many corporations invested a great amount of time and money into studying shuttle configurations, but have had their ideas suppressed by NASA's intervention and initiation of premature detailed design studies.

If the shuttle goes down the drain, the organization itself falls. NASA is trying to hurry the shuttle through to keep it alive. I'm in favor of giving NASA the funds to stay alive, but let's not blow it on the shuttle until they've done more homework.

Mr. MONDALE. Mr. President, thus, if NASA's relatively speculative cost estimates for the shuttle prove to be unreliable—which is quite likely—Mathematica's fragilely constructed rationalization for the shuttle will collapse.

Finally, it should be emphasized that Mathematica carried out its economic analysis solely on the basis of space traffic data provided to them by Aerospace, Inc., and Lockheed Missiles & Space Co.—all three NASA contractors.

I do not believe that we should make another multi-billion dollar commitment to a new space program solely on the basis of studies solicited and paid for by the agency which has the greatest stake in this decision.

In an independent analysis of the Mathematica study, Dr. Lapp concluded that:

Instead of "saving" $7 billion, the Shuttle could actually "cost" us $19 billion more for the U.S. space program.

I wish to repeat that because it comes from an independent scientist who is on no one's payroll. He said this program will not save us $7 billion, but cost us $19 billion more than a program using existing launch vehicles. The National Academy of Sciences also said it could not be justified on grounds of cost.

Other independent judgments on the shuttle—such as the 1970 Rand Report, reports of the Space Science Board of the National Academy of Sciences, and the Federation of American Scientists, and the testimony of eminent space scientists like Dr. Van Allen and Dr. Gold—have concluded that the shuttle would not be cost-effective on scientific or utilitarian criteria.

Even those who disagree with the conclusions of these experts will admit, I think, that a complex technological project like the shuttle raises obvious questions—questions which deserve thorough examination in an impartial study by a body which is free of any conflicting interests and which is in no way dependent on NASA.

I believe the General Accounting Office is capable of performing this type of analysis. On February 17, 1972, I asked the GAO to make an initial study of the cost-benefit analyses—such as the Mathematica Report—used by NASA to justify the shuttle. On March 14, the GAO informed me that they would conduct such a review and issue a report to the entire Congress prior to June 1, 1972. Mr. President, I ask unanimous consent that this exchange of correspondence be printed at this point in the RECORD.

There being no objection, the material was ordered to be printed in the RECORD, as follows:

COMPTROLLER GENERAL
OF THE UNITED STATES,
*Washington, D.C., March 14, 1972.*

Hon. WALTER F. MONDALE,
*U.S. Senate.*

DEAR SENATOR MONDALE: On February 17, 1972, you requested that our Office undertake a review and analysis of the cost-benefit analyses used by the National Aeronautics and Space Administration in support of the proposed Space Shuttle Program.

As indicated in our discussions with your office, we plan to conduct this review and to issue a report to the Congress, with simultaneous distribution to you, cognizant congressional committees, other interested members of Congress, and the public. We believe that on matters as extensive as the Space Shuttle Program, the results of our work should be made available to all members of Congress and to the public.

Although we will have a short period of time to complete the extensive work required, we believe that we will be able to supply data on each area of your request by June 1, 1972. Presently, we are developing work plans for the accomplishment of your request. At the conclusion of this planning, we will meet with Mr. Steven Engleberg of your staff to specifically indicate the information we can obtain and report on by June 1, 1972.

Sincerely yours,

ELMER B. STAATS,
*Comptroller General of the United States.*

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U.S. SENATE,
*Washington, D.C., February 17, 1972.*

Mr. ELMER B. STAATS,
*Comptroller General,*
*Washington, D.C.*

DEAR MR. STAATS: As you know, the National Aeronautics and Space Administration is planning a new Space Shuttle program, which was announced on January 5, 1972. This program will involve an expenditure of $5.5 billion for research, development, test and engineering, together with 20 percent overrun allowance, and $0.3 billion for launch facilities. This Shuttle will be a two-stage vehicle—consisting of a booster and an orbiter. Each booster will cost $50 million, and at this point, the booster's reuse capability is not defined. Each orbiter, which NASA claims can be used 100 times, will cost an estimated $250 million.

NASA claims that each shuttle flight will cost less than $10 million and that the cost of placing a pound of payload in orbit can be reduced to less than $100. Thus, it is argued that the Space Shuttle will be a cost effective vehicle for the space program.

Obviously, the Senate is confronted with a situation wherein prospective economics becomes the basis for a new space transportation system. However, there appear to be many technological unknowns in this new venture and a wide margin of uncertainty in cost estimates. I would therefore deeply ap-

preciate it if your office would undertake a review and analysis of the cost-benefit analyses used by NASA in support of these Shuttle estimates.

In this connection, I would like your review to include, but necessarily be limited to the following:

(1) Identification of supporting analyses for the NASA estimates.

(2) Identification of the processes whereby these estimates were conducted, the organizations involved, and any supporting studies or other work involved in the processes,

(3) Identification of significant assumptions and other critical study elements which influence the estimates of shuttle economics,

(4) Analysis of these studies and their critical elements and analysis of the range of possible effects on shuttle economics forecast by these estimates.

I would like the results in the form of a document showing the range of possible effects on the shuttle economic estimates and a description of the other work described in this request. In view of the urgency of the Space authorization, I would like the members of your staff assigned to this work to maintain a day-to-day working relationship with members of my staff, particularly Mr. Steven Engelberg, and others to be designated.

Sincerely,

WALTER F. MONDALE.

This initial GAO report will not be a definitive study of the shuttle. But I am hopeful it will be a basis for the kind of comprehensive, objective review which is essential before the Congress votes to spend billions of the taxpayer's money.

LACK OF CLEAR-CUT POLICY

Beyond these serious questions about the hidden costs and cost-effectiveness of the shuttle, there is another basic reason for opposing this project.

It seems to me self-evident that the Congress should not approve such massive spending of tax money for development of the shuttle—or for development of any other space transportation system—until we have established a realistic space program for the future. With the impending phase-out of the Apollo program, however, the Nation simply lacks any agreed upon set of objectives—any coherent future policy—for our space program. Only after Congress has approved long-range missions in space and defined their probable costs should we then consider whether an expensive new transportation system to earth orbit is really required—or whether we can save billions by continuing to rely on existing expendable boosters.

Instead, NASA is urging us to approve a multi-billion dollar investment in the space shuttle before these long-term goals in space are established as a matter of national policy. NASA openly admitted this is responding to Dr. Lapp's assertion that the United States has not approved the $42 billion program for orbital missions projected in the Mathematica Report:

"Of course," NASA stated, *"the United States has not approved in detail any space program for the 1980's; NASA* and DOD will continue to seek approval from the Administration and the Congress of their space activities—program by program—as they now do each year." (See *Congressional Record*, page 13790).

This ad hoc, improvised approach may have been feasible so long as NASA was operating within the general context of the Apollo moon program. But with the end of Apollo in sight, neither the public or the Congress—and apparently not even NASA—have an overall strategy and purpose to guide the enormous investments we are now being asked to make. This purposelessness and lack of policy make no more sense in the space program than it would in national defense, in transportation programs here on earth, or in any other type of public program.

What we are being asked to do, then, in approving the shuttle, is to purchase a fantastically expensive vehicle with no real idea of the legitimate and worthwhile transportation demands for that vehicle.

But one thing is certain: If NASA has its way, a commitment to develop the shuttle inevitably will close off certain policy options and back up into others without the slightest public debate on realistic space goals for the future.

As Peter James pointed out in his article on the shuttle.

A space shuttle would probably be "cost-effective" relative to any throw-away launch vehicle if a large number of launches were required. However, if a large number of launches were required it meant that we would dramatically increase the number of payloads launched into orbit relative to our current launch rate. Because the cost of payloads has a significant influence on the total cost of our national space program, the cost of our space program would increase dramatically.

And if people are not willing to support a costlier space program, then it would not be cost-effective to develop the space shuttle. It is impossible to launch more payloads than we are currently launching without significantly increasing annual space expenditures. In short, we know that the shuttle can only be justified if our nation commits itself to a large space program—in excess of what we are already doing. So the option for the 1970's is to either maintain a status quo without a shuttle or greatly increase space expenditures to accommodate an aggressive space program with a shuttle.

Thus, as Mr. James concluded:

Congressmen who do not favor a *greatly expanded national space program*, regardless of their reasons, *should vote against the shuttle.*

Without an approved space program for the future, any analysis of the shuttle's cost-effectiveness—such as the Mathematica Report—is highly speculative and can only be hypothetical. We should keep in mind that Mathematica rests its conclusions on the completely unwarranted assumption that the United States will have a $42 billion earth orbital space program over a projected 12-year period.

In a March 29, 1972 speech at the University of Toledo, Dr. Ralph Lapp aptly characterized NASA's advocacy of the shuttle:

I submit that NASA is putting the cart before the horse—or the rocket before the payload—in focusing Congressional attention on a launch vehicle when it should, in fact, be examining the nature of the future U.S. space program. The only way you can make the Space Shuttle even begin to look economically attractive is to make it a weekly work horse for boosting huge payloads into orbit. I submit that before we get ourselves into a massive trucking operation, we ought to ask ourselves what is the basic purpose and payoff of this vastly expensive activity.

The fact that the shuttle is viewed by NASA as an end in itself—rather than as a transportation system—is demonstrated by the shifts and zig-zags in this project since it was first proposed several years ago. In its desperation to get the shuttle funded, NASA has repeatedly changed its design, purpose, and justification—not to meet legitimate scientific or technological demands, but to make it politically salable.

In 1970, the shuttle and station were presented by NASA as a joint project—the basis of what NASA called a new epoch in manned space flight. The agency justified the shuttle primarily as a reusable logistical truck for carrying men and supplies to a permanent manned space station in earth orbit.

In early 1971, NASA—responding to budgetary pressure—argued that the shuttle was no longer related to development of the station and that it could be justified on its own merits. Within the space of 1 year, NASA completely changed the shuttle's mission and its justification. As one NASA official put it:

This does represent a reversal of priorities. Initially, we thought of the shuttle only in terms of the station; now the shuttle is to the fore alone.

NASA's 1971 version of the shuttle was a reusable, two-staged vehicle—with both stages piloted by men. The estimated development cost of that shuttle was $12.8 billion.

Prior to last year's debate on this issue, NASA again realized that it would be difficult to persuade the Congress to fund such a costly development program. On June 16, 1971, the agency issued a release stating that it was actively examining a phased approach to the development of a reusable space shuttle system in which the orbiter vehicle would be developed first and initially tested with an interim expendable booster. In other words, NASA was considering deferring a reusable, two-staged shuttle in return for a partly reusable vehicle.

Finally, on January 5, 1972, the President announced still another shuttle design. This design—now being considered by the Senate—consists of a partly reusable, unmanned booster—which NASA assumes will be reused as many as 20 times—and a manned orbiter—which NASA claims is capable of carrying out 100 space missions.

One clear fact emerges from this pattern of shifting justifications and changing designs: NASA desperately wants this multibillion-dollar project, and will seek any rationale to justify its development.

What we see, then, is a classic case of a program and agency in search of a mission. Instead of the normal process of presenting a clear and consistent justification for a program—and then seeking to fund it—NASA wants to develop this project on a "fund now, justify later" basis.

There is no more vivid example of the murkiness of NASA's position—and the confusion caused by an absence of coherent policy—than the ambiguous relationship between the space shuttle and the space station. First, NASA presented the shuttle and station as a joint project—with the shuttle serving as a logistical truck to the station; then, NASA

claimed that the shuttle had been decoupled from the station; and finally, at the beginning of this year's debate, the station again emerged as an integral part of the program to develop a shuttle.

In his January 5, 1972, statement, Dr. Fletcher stated that "further in the future," the shuttle will be used to "resupply with men and equipment space modules which themselves have been brought to space by the space shuttle." Dr. Myers—NASA's Associate Administrator for manned space flight—was even more specific in his recent testimony before the committee; he stated that one of the shuttle's primary missions will consist of space station logistic support. And as Dr. Lapp pointed out, the Mathematica report, in its tabulation of future space shuttle missions, listed a minimum of 62 flights to a space station.

It is obvious, then, that the space station is very much a part of NASA's future plans. Nevertheless, NASA persists in attempting to focus this debate on the shuttle alone. They realize that a joint shuttle-station project raises two significant problems.

First, the simultaneous development of both the shuttle and station will create an enormous budgetary strain. In 1970, NASA estimated that the station's development would cost approximately $7 billion; recently, this estimate has decreased to $3 billion. But like estimates for the shuttle itself, I believe that these figures are most unrealistic and that the final costs of the station will be a great deal higher than NASA claims.

And second, the space station is based on the unproven assumption that man can function effectively in a space environment for long periods of time.

A 1969 report by the House Subcommittee on Space Science and Applications stated that:

> If there is an ultimate limiting factor (to exploring space), it may well be the length of time through which man can endure the influence of the hostile environments encountered beyond the earth. The extent and limits of human frailty or endurance have not yet been established.

Weightlessness and other special effects of the space environment may be extremely deleterious and even fatal to man after extended space flight. The Biosatellite III mission—which resulted in the death of a monkey after 8½ days of a scheduled 30-day flight—the medical reports on the cosmonauts aboard the Soyuz flights, and the problems experienced by our own astronauts have reinforced the view in the scientific community that many unanswered questions remain about the biomedical effects of long duration space flight.

NASA's Skylab project is designed to determine the feasibility of manned operations in a space environment over long periods of time. The first of these Skylab missions is scheduled for 1973; and until the results of these missions are evaluated, we will not know whether man will be able to use the space station. Even if it is demonstrated that man can survive in such an environment, the station will undoubtedly have to be tailored to solve various biomedical problems.

It is therefore senseless to begin funding for a giant space station before we have even flown the small one which is supposed to test the concept of space station flight. As Air Force Secretary Seamans told the Senate Space Committee last year:

> We should wait until we have had further experience with the Skylab program and the shuttle before we embark on a space station mission. Knowledge derived from Skylab will give us a greater understanding of the role that man can perform in space and only after a thorough investigation and analysis of the shuttle, can we predict with reasonable accuracy our ability to resupply such a station economically and to ferry astronauts, scientists, and engineers back and forth from the space platform.

Thus, NASA's claim that the shuttle can be justified independently of the station presents it with a very basic dilemma: with the station, it has an enormously expensive development program over the next 7 or 8 years which even NASA knows Congress and the American taxpayer will not support; and it has a program which depends on unanswered questions about the feasibility and value of long duration manned space flight; decoupled from the station, the shuttle is left without a primary purpose and without the activity needed to enable it to begin to make sense from a cost point of view.

It is evident that NASA has resolved this dilemma by deciding to proceed as soon as possible—perhaps after clearing this year's hurdle on the shuttle—with rapid development of the station. As Dr. Low of NASA told the Senate Space Committee last year, expedited development of the station is very much a part of NASA's plans:

> I think it is a question of timing—
>
> He stated—
>
> as to when we should move out with the space station. *I am not sure we need to wait until the shuttle and the Skylab are fully developed.* It may well be that as our space program moves out into the 1970's that we would decide sooner rather than later to start the full development of the space station as well.

NASA's strategy boils down to this: Once the shuttle is no longer endangered by congressional opposition, the other multibillion dollar shoe—called the space station—will drop. We will be told that the station's development logically follows from development of the shuttle. And we will be back to where we were when NASA first presented the shuttle and station as a joint project in 1970.

As one commentator perceptively noted:

> The shuttle is a bundle of oddities such as even the space age has not seen before. It is really only half of a bigger project sonorously labeled the "Space Transportation System." The other half is a large manned orbital station and is what the shuttle originally was meant to shuttle to and from. Only it's becoming apparent that there isn't enough money to build the two halves concurrently. So the shuttle will be built first. And when it is built, probably it will have no place to go (fifty times a year) until the space station comes along five or six years later.

Underlying NASA's shifting positions on the shuttle and its obfuscation of the role of the station is one central fact: NASA has persistently refused to confront the basic policy questions of what we expect to achieve in space, for what purpose, and at what cost.

To the extent that NASA has considered future policy, it is apparent that they are determined to keep intact their large bureaucracy built around the manned space program. Thus, the NASA Administrator has stated that a primary reason for developing the shuttle is that it "is the only meaningful new manned space program which can be accomplished on a modest budget."

NASA's belief that the shuttle is essential to its bureaucratic future—particularly to its future in manned space flight—is certainly not a sufficient reason for funding this multibillion dollar project. Before this large-scale undertaking—or any other public expenditure—can be justified to the American taxpayer, the Congress must be convinced it is designed to meet real and pressing public needs.

I do not believe this burden can be met unless there is a clear and precise definition of a future space program in terms of launch vehicles, payloads and missions. As NASA concedes, no such program has even been presented to the Congress—let alone approved by it.

Ironically enough, NASA's own contractor—Mathematica, Inc.—aptly summarized the criteria by which the shuttle should be judged. As they emphasized in their report of January 31, 1972:

> *Any investment can only be justified by its goals.* This applies to business as well as to government, hence also to NASA. *A new, reusable Space Transportation System should only be introduced if it can be shown, conclusively, what it is to be used for and that the intended uses are meaningful to those who have to appropriate the funds, and to those from whom the funds are raised,* as well as to the various government agencies that undertake space activities. (emphasis added)

The demonstrated failure of the shuttle proposal to meet these criteria makes it clear that the Congress cannot at this point sanction this multibillion-dollar expenditure.

At a time when millions of Americans are finding it a torture just to get to and from work, we are on the verge of spending billions of dollars to carry a few men to earth orbit. Just the development cost of the shuttle will be approximately six times what the Federal Government has spent for all mass transit programs in the last decade.

In the magnitude of its cost, in the folly of its concept, and in its damage to the country, the space shuttle is many times worse than the SST. If Congress rejects the shuttle—as it rejected the SST—we will again prove that in a democracy, people have a right to demand that Government-supported technology serve human needs.

EXHIBIT 1

FEDERATION OF AMERICAN SCIENTISTS REVIEWS SPACE SHUTTLE

(NOTE.—The statement and analysis released in 1971 was approved by the Federation and prepared by an Ad Hoc Committee chaired by Philip Morrison, Professor of physics at MIT, and containing Eugene B. Skolnikoff, Chairman of the Department of Political Science, MIT and Leon Trilling, Professor of aeronautics, MIT.

(The Federation's review of this program

was prepared and reviewed by two highly experienced analysts and observers of military and space programs.

(Dr. George W. Rathjens, of the MIT Political Science Department, is professionally engaged in teaching methods of just such analysis and has a long, varied, and widely admired career in their practice. He has been Deputy Director of the Advanced Research Projects Agency in the Department of Defense's Directorate of Defense Research and Engineering; Deputy Director for Science and Technology of the Arms Control and Disarmament Agency and Director of the Weapons System Evaluation Division of the Institute for Defense Analyses.

(Dr. Von Eshelman has been long engaged in space programs. He has been the principal investigator for space science experiments on lunar and planetary missions (Apollo, Explorer, Mariner and Pioneer) and has been a long-standing consultant to NASA. In particular, he was, from 1966–69, a member of the Lunar and Planetary Mission Board of NASA. Dr. Eshelman is now a member of the Electrical Engineering Department of Stanford University.)

On July 15, 1971,[1] the Federation released a statement in opposition to the Space Shuttle then being proposed. We argued that: 1) the space shuttle would not do anything for NASA that it could not already do and would have to be justified on economic grounds; 2) that the level of use required to make it economic would be justified only if there were a plan for substantial manned occupation of orbit; and 3) that the shuttle should therefore not go forward until the investment value of the scheme were shown in terms of foreseen and desired uses of heavy launched payloads.

This year, the shuttle proposal has been modified and new justifications put forward for it. FAS has therefore reexamined the program. But its conclusions are similar. This report concludes that the alleged economic benefits are based on assumptions for which there is little basis, assumptions which are likely to prove seriously in error. FAS supports a vigorous program of unmanned flights for applications devoted to improving man's condition on Earth. But we fear that heavy investment in the shuttle may divert attention from such important areas and may undermine public support for the space program in particular and credibility in Government in general, when it becomes apparent that the shuttle was sold to the public on a misleading basis. Further, it may lead to space investments not really desired by the public simply because the shuttle would then have been expensively funded. Waste would beget waste.

SUMMARY

The space shuttle is being sold to the Congress and to the public as an economical transportation system for a space program in which the primary emphasis would be on the use of instrumental satellites for applications and space science. The relationship of the shuttle to manned space flight and to military programs is being played in low key.

The result is that the Congress and the public are being asked to approve the program on the basis of presentation of its utility and likely import that is misleading in several respects.

First, the alleged economic benefits of the program as compared with one based on the use of expendable boosters is based on assumptions for which there is little basis, and which in fact we believe are likely to prove seriously in error—particularly assumptions that there will be a substantial increase in the number of unmanned civil satellite launchings as compared with the present frequency, and that the use of a shuttle would result in substantial savings in space payload costs. The use of more realistic assumptions would mean that the cost of a reasonable space applications and science program would be more with the shuttle than without it.

Second, although the Defense Department clearly does not regard the shuttle as a high priority item, it seems likely that the military utility will be greater than that to the civil sector. Accordingly, if the shuttle is to be developed, a substantial part of the funding and the defense of it should be by the Defense Department.

Third, and most important, we believe that the shuttle ought really to be considered primarily as a part of a continuing effort by NASA to maintain the manned space program with momentum and as the centerpiece of its activities. We are particularly concerned because we believe a vigorous program of unmanned flights primarily for applications purposes, such as for improved communications and weather forecasting, but also including space science launches, has much to commend it, and we fear that emphasis on the shuttle may divert attention and resources from these important areas. We are also concerned because we feel that it is these kinds of programs, particularly the applications programs, that can command public support. We fear that if the shuttle is misleadingly sold to the public as having its primary justification in such programs there may be a later reaction, when its true impact becomes apparent, reflecting adversely on the whole space program and contributing to erosion of confidence in government.

COMMENTS ON THE SPACE SHUTTLE

In advocacy of the proposal to build a space shuttle, NASA, its contractors, and supporters have advanced a number of arguments which we believe must be questioned. We summarize the major arguments very briefly below and then comment on them and on a few additional points.

a) It is claimed that on narrow cost-benefit considerations the shuttle is desirable: that with its development and use, we can have the same kind of space program that would otherwise be acceptable and make sense for us at a saving of several billions of dollars, e.g., at a saving through 1990 of 5 to 7 billion according to one estimate[1] and 5.35 billion according to another.[2] This conclusion derives from several subsidiary assumptions and arguments.

1) It is assumed that the number of U.S. space launches will increase from the present level of about 30 per year to a somewhat higher level during the 80's. The savings cited above in reference 1, for example, are based on an assumption of 514 space shuttle flights during the period 1979–1990, i.e., an average of 43 flights per year, and those in reference 2 on 580 flights during the same period.

2) It is assumed that with the shuttle it will be possible, and economical, to repair some satellites in orbit and to retrieve many others for refurbishment and relaunch.

3) It is estimated that the shuttle will make possible the use of less expensive payloads: that, because of less severe constraints on weight, reliability, and ability to withstand high loadings, it will be possible to achieve substantial savings on payload costs without sacrifices in performance.

These assumptions, particularly the second and third, and an assumption that the cost of a shuttle would be reasonably consisent with present estimates, are the major ones which have led to rather favorable conclusions of the Mathematica study regarding the economic attractiveness of the shuttle.

In fairness, however, it must be said that the Mathematica study generally plays down the argument that the shuttle is economically attractive in terms of straight transportation costs. While it argues that undiscounted recurring launch costs will be substantially less with the shuttle than with expendable boosters, at the 43 flights per year level, the non-recurring costs of the shuttle program are estimated to offset the launch savings.[1]

On the other hand, statements by NASA and other supporters have been much less cautious and indeed in our view misleading with respect to the issue of transportation costs. Thus, NASA has made a major point of arguing that the shuttle will be an economical transportation system, reducing the costs of putting payloads in orbit by a factor of 10.[3]

b) It is claimed that the development of the shuttle will have favorable effects on employment particularly in the aerospace industry.[4]

c) It is claimed that development of the shuttle is important for American technology and that there may be important spin-off effects.

d) It is argued that the shuttle may be of importance as a rescue vehicle.

We now comment on the major questions raised by the shuttle.

*Does the Shuttle make sense in terms of straight transportation costs?*

The case for the space shuttle has been based in part on its use to replace large, expensive boosters. Indeed, it has been repeatedly argued that the shuttle would economically replace the whole family, the Scout and the Saturn V excepted.[5] These arguments would make sense if a completely reusable shuttle with recurring launch costs of about $5 million had already been developed. However, we have yet to incur the development costs. Moreover, even after development is completed the cost per launch with the shuttle design that has now been selected will be about $10.5 million *according to NASA*.[3] This figure should be compared with costs of about $6–7 million for Delta launches and $9–10.5 million for most Titan III B launches with either the Agena or Centaur upper stages. In addition, many Titan III D launches will apparently be in the range $9.8–10.6 million each. (NASA's figure for the Titan III D is $13.2 million.[6])

If one looks at the NASA Office of Space Science launch record for last year one finds that 4 out of 16 launches were carried out with Atlas-Centaur vehicles. In these cases the use of a shuttle, had it been developed, would have resulted in modest savings. (The cost of an Atlas-Centaur launch is, according to NASA, $15.8 million.) However, for the other 12 launches, which employed Scout and Delta vehicles, use of a shuttle would have resulted in substantially increased costs. Looking to the near future the situation is similar. For the years 1972, 73 and 74 of 52 projected launches in only 13 cases would there be a saving were the shuttle available. Even when one considers the flight schedules for the period 1979–90 on which the Mathematica study is based, it becomes clear that less than half of the launches would cost less using the shutttle than if existing vehicles were used.[6] NASA figures in this regard are truly remarkable. One reference [2] cites a figure of $13.2 billion for launch and launch-related costs for 580 launches during the period 1979–90 using expendable boosters, an average cost of $22.7 million per launch. This figure should be compared with the launch costs cited above and others, e.g., for Titan III C $20.4–$23.8 million according to NASA. One is led to assume that NASA contemplates a dramatic increase in average payload weight requiring that nearly all payloads be launched with Titan III C or comparable expensive boosters. Such an assumption would seem to have some validity as regards launch of military satellites (see p. 23), but none whatever as regards unmanned civil payloads. Certainly it is gross-

Footnotes at end of article.

ly inconsistent with the assumptions regarding payloads that appear in the Mathematica study.[7]

The comparisons above all neglect shuttle development costs. If these are included, $5.15 billion according to NASA,[2] just the interest that the government would have to pay to borrow the sum would come to over $300 million per year or an additional $6–8 million per launch, if one assumes launch schedules at the NASA-Mathematica levels, and *far* more if one assumes that the shuttle is used only for those launches where a saving would result. If as little as $6 million per launch were added to the recurring costs of the shuttle the case for it looks much less favorable than suggested in the paragraph above: *no* civilian missions in 1971 or 1972, only 1 in 1973 and 2 in 1974 would have involved lower launch cost using the shuttle in place of expendable boosters.

We note in passing that costs for the present family of boosters are relatively hard procurement costs; those for the shuttle are estimates which are more likely to be too low than too high.

Notwithstanding the relatively high cost per flight with the shuttle NASA and some supporters have argued that great economies in transportation will be achieved, in particular citing reductions in the cost of delivering payloads to near earth orbits from about $1000 per pound with expendable boosters to $100 or $160 per pound, the $100 figure applying to shuttle configurations now rejected [8] and the $160 figure applying to the design recently selected.[9] These figures are deceptive.

In the first place they do not include RDT & E costs: The $160 figure is obviously derived simply by dividing the recurring cost of $10.5 million per launch by the maximum payload of the shuttle of 65,000 pounds. If one included the RDT & E cost of the shuttle and amortized it over the 514 flights assumed by Mathematica [1] or the 580 flights assumed by NASA [2] for the period up to 1990, the costs per pound would be roughly doubled. Moreover, if one discounts future costs, as one should and as the Mathematica study does, the comparison between the shuttle and the expendable boosters will be still less favorable than simple undiscounted figures suggest since, with development costs included, costs for the shuttle will be less heavily discounted than those for the expendable boosters. This last point is illustrated if one repeats the calculations of reference 2 but with discounting of future expenditures. With the use of any discount rate greater than about 7% or 8% (the Mathematica study uses 10% as its central case), NASA-cited savings of $5.35 billion that might be achieved through use of the shuttle completely disappear.

Far more important, the $100 or $160 per pound figures quoted by NASA assume the shuttle would carry a full payload of 65,000 pounds each flight. There is not the slightest basis for making such an assumption. On the contrary, there are overwhelming arguments suggesting otherwise. Even Mathematica claims that the shuttle would, on the average, carry a satellite payload weight of only about 5,000 pounds.[10] At that rate, the cost per pound delivered to orbit would be $2000 without amortization of development costs. Actually, even the 5,000 pound figure quoted by Mathematica seems excessive at least for civil payloads. As James Van Allen has pointed out, if one discounts the Apollo payloads which are coming to an end and which in any case would require Saturn V or similar boosters, the aggregate weight of all science and civilian space applications payloads in 1969, a good year in space, was 11,400 pounds.[11] It is true that the total weight that had to be boosted to near-earth-orbit energies exceeded this substantially because some of the payloads were delivered to geosynchronous orbit and two were to Mars. Nevertheless, even when one considers that putting a payload in synchronous orbit requires that about 10 times as much weight be delivered to near-earth-orbit, it would seem unlikely that space science and unmanned applications programs as we have known them in the past would have used more than three or four per cent of what the shuttle could have delivered had a shuttle flight replaced each expendable booster launch. (The three to four percent figure is based on calculating the weight of all civil payloads launched during the three years ending September 30, 1971 making allowance for the extra propulsion required in those cases where launch was to other than a near-earth orbit.)

One could perhaps envisage using the shuttle efficiently by greatly limiting the number of launches, with each launch carrying many payloads—it would normally take a dozen or more to use its capacity—but this is clearly not what NASA has in mind since it projects a relatively modest budget for payloads and yet large numbers of shuttle flights—30 to 75 per year. Moreover, a reading of NASA and supporting documents generally suggests that the number of satellites to be launched is not markedly larger than the number of shuttle launches.

The unlikelihood that the shuttle will be used to anywhere near its capacity is easily demonstrated by other figures released by NASA. For example, the kinds of launch schedules on which NASA bases its arguments imply a capacity to deliver 2–3 million pounds per year of payload to near-earth orbit energies. If one multiplies this by a cost of $20,000 per pound. NASA's figure for satellite payload costs, one gets a total payload cost of 40 to 60 billion dollars per year, manifestly ridiculous—and ridiculous even if one reduces the 2–3 million pounds per year, and therefore the total payload cost, by a factor of, say, two to reflect the fact that many payloads will be put in high energy orbits; and that for those, the ratio of payload weight to gross weight at lift-off for either the shuttle or other boosters will be much less than in the cases of launches to near-earth orbit.

Finally, even NASA admits that 90% of the civil payloads and 63% of the DoD missions could be carried by a smaller shuttle than the one it now proposes to build.[12]

Proponents of the shuttle may raise the argument that with redesign of payloads to reduce costs, payload weight will increase. We are inclined to discount this whole line of argument (see page 12), but even shuttle proponents argue in terms of increasing payload weights only by a factor of about two,[13] hardly enough to change our conclusion that the payload delivery capacity of the shuttle would be grossly underutilized by scientific and application payloads which we can reasonably expect to launch in the future.

We reach the following conclusions regarding the shuttle as a transportation system:

(1) for most unmanned civilian payloads the shuttle will not be competitive with expendable boosters even if one discounts completely RDT & E costs. If one includes the latter, and with any reasonable amortization, there will be *very* few such payloads for which the shuttle would provide competitive transportation.

(2) talk of reducing transportation costs by an order of magnitude through the use of the shuttle is irresponsible. Such reductions could be achieved, if at all, only if the shuttle were to deliver near-capacity payloads on each flight. With few exceptions, the cost per pound delivered to orbit is likely to increase, not decrease, if the shuttle replaces an expendable booster.

(3) real economies in transport can be realized through the shuttle only if one envisages a greatly expanded manned space flight program or a greatly expanded military program. If the former is envisaged, that is the question the country should be debating, not whether to build the shuttle. If the latter, not only should the country be debating the issue of such extensive use of space by the military, but the Defense Department, not NASA, should be paying the bulk of the costs and defending the shuttle program.

(4) we agree with Mathematica, "A space shuttle does not appear to be an economic investment when only launch costs are considered." [14]

*Are the projections of increasing numbers of satellite launches realistic?*

Since 1966–67 the number of U.S. unmanned satellite launches has dropped by a factor of more than two: from over 70 in 1966 to a present level of about 30 per year for the total program; and from about 40 to 15 for the civil program. Despite this trend, the NASA-Mathematica analyses are based on a program that involves much larger numbers of flights. Mathematica apparently looked at a NASA-DoD baseline case involving 736 shuttle flights during the period 1978–1990, an average of 56 per year and then at 25 additional scenarios with numbers of flights ranging from as few as 494 (38 per year) to as many as 1221 (94 per year).[15] NASA cities as its latest illustrative case 580 flights over 12 years (48 per year).[2]

These numbers of flights are hard to rationalize particularly when one recognizes that in fact the NASA-DoD baseline figure and others used by Mathematica and NASA ought not to be compared with the present level of 30 launches per year but rather with a lesser level since the figure of 30 includes Scout launches (7 in 1971)—launches which, according to NASA, the shuttle will not replace and which therefore are not included in the figures of 56, or others, used by Mathematica or in the NASA figure of 48. We see no particular reason to believe that the trend of a diminishing number of launches which has been observed during the last few years will be dramatically reversed. Indeed, there are rather strong arguments to suggest that we may see little, if any, increase.

First, the Defense Department has stated that it anticipates that the level of its launches will remain constant at about 20 per year.[16]

Second, the capabilities of applications satellites, notably the communications satellites but also others, have increased dramatically in recent years and are likely to do so for at least a few more. Coupled with longer expected lifetimes than were appropriate to the technology of the mid–60's, small numbers of satellites will provide great capacity.

Third, the cost of payloads, both applications and scientific, is increasing as they become more complex. That being the case, and with the public somewhat disillusioned with science in general and space in particular, there may be little enthusiasm for a program of increased expenditures on space applications and particularly on space science. We note in this connection that, contrary to this reasoning, one of the Mathematica-cited projections—we presume not an unrepresentative one—shows a significant growth in NASA payloads, up from 13 in 1971 [17] to 19 in 1979 and an even more dramatic increase later (to roughly 40 launches per year from 1981 on).[18] Growth in total civil payloads is from 15 in 1971 [17] to an average of about 55 in the 1980's.[18]

We believe projections of a substantial increase in numbers of launchings reflects wishful thinking on the part of NASA, and suggest that an analysis of the shuttle ought more reasonably to be based on the assumption that traffic levels may remain about as they now are: perhaps 15 to 20 unmanned NASA launches per year of which three-

Footnotes at end of article.

quarters could be carried out using Scout or Delta boosters at costs less than would be involved if the shuttle were used; and perhaps 20 DOD launches per year.

*Is it likely that payload costs will be greatly reduced if the shuttle is used to deliver them to orbit?*

NASA has argued that with less severe constraints on weight and reliability, and concomitantly with the use of modular designs, substantial reductions in payload costs will be made possible by the shuttle. It has apparently based its case on a study done for it by Lockheed Missiles & Space Co. which concludes, based on an analysis of three payloads, that the application of low cost design techniques will result in savings on payloads averaging greater than 25%.[19]

We do not doubt that some reductions in payload costs would be possible; whether 25% is a reasonable figure is more debatable. However, we observe that such an approach to reducing payload costs is inconsistent with the whole trend in the American aerospace industry, in which the emphasis has been on the development of greater reliability, microminiaturization and ruggedization—not in moving in the opposite directions.

Moreover, the NASA-Lockheed approach to reducing payload costs is likely to be a relatively inefficient one. A consideration of communications satellites will perhaps illustrate our point. Since Early Bird was launched in 1965 we have seen a many-fold increase in capacity with only a three-fold increase in satellite costs. If one takes these factors into account along with the longer expected life of the newer satellites we have had an improvement in capability by a factor of about 50 in seven years, the same length of time that will be required for shuttle development. Against this kind of improvement a reduction in satellite costs of 25% to take advantage of the less severe constraints of the shuttle as compared with expendable boosters is not impressive. It is probably unlikely that 50-fold improvements can be realized in communications satellite or other satellite technology over the next seven years, but we can not but believe that expenditure of but a small fraction of the shuttle development budget on accelerating payload development would produce a much greater than 25% reduction in payload costs by 1979.

*Can substantial savings be realized by using the shuttle for refurbishment of satellites either in orbit or with retrieval?*

The NASA and the Mathematica arguments for the shuttle depend very substantially on assuming considerable retrieval and refurbishment. Thus, it is claimed that satellites can be refurbished either in orbit or on the ground for about 35% of the cost of replacement,[19] and an exemplary schedule of launchings used by Mathematica shows over half of the NASA launchings and about ¾ of the DoD launchings during the period 1978–90 to be refurbished satellites.[20]

We do not question the assumption of a 35% replacement cost, but we most seriously question the assumption that a large fraction of satellites, particularly 50% of the non-DoD satellites, would be judged worth refurbishing. A few very likely would be, e.g., the large, expensive astronomical payloads (of which there will be perhaps half a dozen during the period 1978–90). Most others will not be because of obsolescence, relative inaccessibility, or a combination of the two.

The communications satellites serve to illustrate these points. The expected life of such satellites now being built is 7 to 10 years, and even if such a satellite were in near-earth orbit it would not be worthwhile retrieving it at the end of, say, 7 years for refurbishment at a cost of 35% plus retrieval costs. By that time the satellite would be obsolete and this would be true even if capabilities improved at the rate of only 5 to 10% per year, not, as they have been, at about 75% per year. Indeed, we have probably reached the point, simply because the technology advances so rapidly, where it would not be worth spending even modest amounts to extend the life of communications satellites. Why then spend much larger amounts for retrieval and refurbishment?

Actually, the case for refurbishment of communications satellites is even weaker than suggested above because of the difficulties of retrieval or access. Because geosynchronous orbits are used such satellites could be neither refurbished in orbit nor brought back with the space shuttle alone. What would be required in these cases would be what NASA calls a space tug or the Air Force calls an orbit-to-orbit shuttle, and even if such a vehicle were developed (the projected NASA budgets do not contain funds for it), the costs of refurbishment would be much greater than in near-earth orbit cases.

It might be argued that the communications satellites are unrepresentative and particularly unfavorable examples for refurbishment. This is probably true both because of rapid obsolescence and relatively long life and because of the use of synchronous orbits. Nevertheless, we doubt that the NASA arguments regarding refurbishment can be supported by a broader look at the space program. For example, if one considers the unmanned civil satellites launched during the three years ending last September 30 one finds there would have been very little case for refurbishment had we had a shuttle. Probably refurbishment of the large astronomical observatories would have made sense—OAO–2, OGO–6, and OSO's 5, 6 and 7; and the total savings over three years would have amounted to a couple of hundred million dollars at most. For most, if not all, of the remaining satellites refurbishment would probably have been ruled out: for the Explorers because payload costs are generally relatively low; for the communications satellites for the reasons given earlier; for the weather satellites because, as with communications, obsolescence occurs rather rapidly; and for the planetary probes and other payloads in high energy orbits because of the difficulty and cost of access. Contrary to the Mathematica estimate[20] that half of the civil launches in the 80's would involve refurbished payloads or on-orbit maintenance we believe that for only a very limited number of payloads would this be rational.

We also note that while Mathematica assumes that three-quarters of the Defense Department launches would be refurbished satellites, the Air Force itself states that over 50% of the planned DoD payloads will have to be delivered to high energy orbits from which retrieval would be relatively expensive and for which a space-tug would be required.[16]

We conclude our comments on the cost-benefit aspects of the shuttle by reiterating that the favorable Mathematica analysis is moderately sensitive to an assumption of a considerably expanded space program and strongly sensitive to assumptions of savings in payload costs that might be achieved through changes in design and through refurbishment. These assumptions have little foundation and thus the Mathematica conclusions must be seriously questioned.

We believe that more realistic assumptions would lead one to conclude that the shuttle cannot be supported on cost-benefit grounds.

*Would there likely be a reasonable pay-off using the shuttle to save satellites that might otherwise be lost through malfunction?*

Particularly in the light of the failure in late 1970 of the orbiting astronomical observatory, NASA and its supporters have emphasized the role that a space shuttle might play in salvaging payloads that might be lost in the future through similar malfunctions. We do not discount the seriousness of the loss of the OAO. It was a payload which, with launch costs, represented an investment of the order of $100 million, not to mention the serious losses to science. But the problem should be put in perspective. It was the only loss that year out of 14 space science and application launches, and the fact that it happened to be the most valuable payload in the lot should be regarded as a case of particularly bad luck. Very likely the total value of all civilian payloads lost since the space program began is only in the range of $300 million and there is no reason to think that the record will be worse in the future (unless, with the shuttle available, we adopt sloppy practices that lead to a higher failure rate—in our view an unwise course even though salvage would be, in many cases, possible). Moreover, some losses could not be prevented even with the shuttle—some of those involving geosynchronous orbits, unless a space tug is also available; and some planetary flights. Finally, we note that even when a payload is lost one still retains the knowledge of how to build a replacement. It is fair to count the cost of replacement and the cost of launch as losses but not the R&D involved.

We can reasonably expect then that, on the average, losses, preventable with a shuttle, will be measured in tens of millions of dollars per year—an order of magnitude less than just the interest cost on the shuttle R&D program. Thus, if one allocates even a small part of the shuttle costs to payload salvage one is confronted with a remarkably unfavorable insurance proposition.

We doubt that even those scientists who lost payloads in the OAO–B failure would view such insurance favorably considering that NASA has found it necessary to remove from its projected program other launches, two orbiting solar observatories to be specific, because of funding constraints—constraints that would very likely not exist in the absence of a shuttle program.

*Should the possibility of astronaut rescue be regarded as an important argument for the shuttle?*

Unless we are to have a manned space program very much larger than NASA has been prepared to advocate, the case for the shuttle as a rescue vehicle for men is even weaker than as a rescue vehicle for unmanned payloads. This is primarily because we do not expect to put nearly as many manned as unmanned vehicles in orbit nor maintain them there for as long. Moreover, in many cases a rescue capability could be arranged without the development of the shuttle. Indeed, this is contemplated in connection with the Skylab project for which the shuttle will not be available. Finally, crass though it may seem, it is probably relevant to compare the expected cost per life saved using the shuttle with the costs of saving lives of people on earth through additional federal expenditures. When this is done, and when one considers the risk of loss of a man in space, it becomes clear that allocation of as much as a hundredth of 1% of the shuttle costs would represent a misallocation of priorities. (Some years ago HEW produced a study in which were compared a number of programs for averting death and produced estimates of cost of from $87 to $43,000 per life saved.[21] While the methodology and conclusions of that study are open to some question—in some cases serious ones—there can be no doubt that federal expenditures in any of a number of areas would be far more effective as life-saving measures than the development of the shuttle.

Footnotes at end of article.

*Will the shuttle have a favorable effect on employment in the aerospace industry?*

Some proponents of the shuttle, notably members of Congress, appear to favor it in part at least because of the belief that going ahead with it will help the aerospace industry. The assumption is questionable and in any case inconsistent with the case NASA and Mathematica make for the shuttle.

NASA and Mathematica have argued that with the shuttle we can accomplish the same (and additional) objectives in space that would be possible with expendable boosters at several billions of dollars less cost between now and 1990. We doubt this, but note that, if the estimate is correct, each billion dollars of savings will mean virtually a billion dollars less than will be spent on employment in aerospace work. The proponents of the shuttle can not have it both ways: they can not argue that with the shuttle the country will save money on its space program and also increase employment in the aerospace industry.

Going ahead with the shuttle would, of course, have different local effects than spending an equivalent amount on a program based on expendable boosters. Presumably more money would be spent on propulsion and the development of hypersonic flight technology while less, and in the view of NASA and Mathematica, substantially less, would be spent on electronics, optics, electromechanical devices and in other technical areas related to payload development.

There would also be a difference in the timing of expenditures in the two cases.

From a very short term perspective, the effects of the shuttle will be small: expenditures won't really begin to rise rapidly until fiscal 1974. Meanwhile, as we note later, other space programs are being deferred or cancelled because of budgetary constraints. Insofar as one's concern is with aerospace employment, the near-term effect of the shuttle would then seem to be neutral: a modest increase in employment directly related to it, roughly offset by decreases in employment on other programs.

As regards the longer term, Mathematica calculates that the effect of the shuttle program would be to increase space program costs from 1972 to 1979 followed by more-than-offsetting savings from 1979 on. One can ask whether increasing expenditures on space in the early and mid-seventies with an offsetting diminution in the 80's is in the national interest. Economic projections over the time scales in question are so fraught with uncertainty as to render any answer to such a question of doubtful validity. Nevertheless, one can at least take account of demographic trends. We note in this connection that shuttle development expenditures can be expected to reach a peak in 1976 and then drop whereas the labor force will be growing rapidly up to the mid-80's, the effect of the first echo of the post-World War II baby boom. Thus, on demographic grounds, a peaking of the space budget in the mid 70's followed by a later offsetting diminution such as might be the effect of the shuttle would seem badly matched to projected changes in the labor force.

*Will the shuttle program produce significant technological spin-off?*

We can expect some useful spin-off from the shuttle program that will have relevance to non-space activities, e.g., as regards hypersonic flight technology. However, we will likely learn far less per dollar expended than if we spent equivalent amounts on research specifically directed at non-space objectives.

Moreover, if one believes the arguments that expenditures on the shuttle will be more than offset by savings on payloads, there may be an offsetting diminution in spin-off in areas relating to payload development, e.g., in micro-miniturization and improvement in reliability of electronics.

*Will the development of the shuttle advance space science?*

We have already noted that because of budgetary constraints NASA has removed two orbiting solar observatories from its current schedule of projected launches. It has also scrapped the "grand tour," a proposal to fly by the outer planets made possible by their favorable conjunction during the late 1970's. (It would be possible to send a single mission to Jupiter, Uranus and Neptune and another to Jupiter, Saturn and Pluto, in each case using the gravitational attraction of Jupiter to minimize energy requirements to visit the planets beyond.) We also note that the present Mariner 9 flight is carrying fewer experiments than earlier were planned, not because of weight constraints, but because of budgetary considerations.[23] Finally, we note that, in view of fiscal constraints, NASA is not proposing to start major new projects during Fiscal Year 1973.[25]

It would seem then, that demands of the shuttle and the concomitant increased pressure on the budget may well have an adverse effect on space science programs.

*If the shuttle is to be developed who should pay for it?*

Most of our discussion of the shuttle, and most of that which has occurred before both the Congress and the public has been with respect to its role for civil purposes. This is not surprising considering that much of the military space program is highly classified and the fact that development is being entirely funded, and largely defended, by NASA. We suggest that the resulting picture has been a distorted one—one that plays down the military role and provides an overly optimistic view of the utility of the shuttle for civil purposes.

We note in particular that

a) the design of the shuttle has been determined largely by military requirements. A smaller shuttle with less maneuverability, and consequently one that could be developed at lower cost, would have met most of NASA's "requirements."

b) presently over half of the space launches are for Defense satellites, and NASA's views to the contrary notwithstanding, we see no reason to believe the fraction will change (see p. 10).

c) nearly all unmanned civil payloads could be placed in orbit less expensively using expendable boosters than with the shuttle (see p. 3–9) while this will likely be true for a smaller fraction of Defense payloads. Without going into detail as regards military programs this would seem to follow from Defense statements that more than half its payloads will be placed in high energy orbits (for which relatively heavy upper stages would be required),[16] from the statement that a smaller shuttle could carry 90% of the civil payloads but only 63% of the military ones,[12] and from the fact that the Titan III is supplanting the Thor-Delta as the major Air Force launch vehicle.

d) the case for retrieval and refurbishment of satellites, possibly the strongest argument for the shuttle, is a stronger one in the case of military than for civil satellites. This is apparent even from projections used by Mathematica wherein it is estimated that roughly ¾ of the military launchings will be refurbished satellites while this would be true of only about ½ of the civil payloads (in our view, the latter estimate is an unrealistically larger one at that—see p. 14–16).

With these considerations in mind, we suggest that the military benefits of the shuttle will be comparable to, if not greater than, those for the civil sector; and that accordingly at least half of the development costs should be carried by the DoD. In this connection, the shuttle should compete with other DoD programs for a claim on the military budget, and should be defended by the DoD before those Congressional committees with responsibility for the allocation of resources to the Defense sector.

Were the shuttle to so compete, it would fare badly. The Air Force has said, in effect, that while the shuttle would be nice to have, it is not eager to pay for its development. In fact, it has been explicitly stated that the shuttle would rank below such programs as the B–1 and the F–15 in priority within the Air Force.[24]

Finally, we note that there would appear to be an even better customer for the shuttle than the U.S. Department of Defense. That is the Soviet Union which is now putting up more than twice as many payloads per year as the U.S.—payloads that are generally heavier and probably less reliable and shorter-lived than their U.S. counterparts, and which would therefore be better candidates for shuttle-type delivery.

While we would certainly not suggest that U.S. decisions as regards space vehicles should necessarily be similar to those of the U.S.S.R., the lack of evidence of a Soviet program, despite the much greater incentives, should at least give us pause.

Of course, the shuttle would make most sense if it were a joint venture with, say, the U.S. doing the orbiter and the Soviet Union the booster or vice versa. If we must have a shuttle ought not this option be at least tried?

A FINAL COMMENTARY—THE REAL ISSUE

While shuttle proponents have adduced arguments based on narrow cost benefit considerations, effects on employment, etc., and we have attempted to deal with them, it is important that the public and the Congress recognize that these issues are peripheral to the main one that relates to the shuttle. That is the question of the kind of space program the country wants and should have.

We believe that support for the shuttle has its basis primarily in the belief of proponents that it will have effects on the whole nature of the space program of the future that they view as desirable rather than because it will be a useful instrument for carrying out presently envisaged missions.

Once it is developed, if it is, proponents can be expected to argue for a number of missions, which would not otherwise be justified. One can already see the harbingers of this in this year's budget defense, e.g., in remarks by James Fletcher, the Administrator of NASA.[25] With a shuttle developed, there will be missions (in our view actually a very limited number) that will make sense, the development costs of the shuttle already having been incurred, which would not make sense if one considered them at *this* time and included an appropriate share of the shuttle development costs.

More importantly, proponents see the shuttle as maintaining the momentum of the manned space program. In this connection one should bear in mind that the antecedents of the shuttle are in the earlier interest in a manned Mars landing as a follow-on to Apollo, and more recently, as the Mars landing lost favor, in the proposal to build a large manned space station to which the shuttle would have provided transportation. The shuttle has survived both the Mars landing and the space station as the follow-on to Apollo—as the vehicle for keeping the NASA budget at the greater-than-$3 billion-per-year level and for maintaining manned space flight as the primary focus of the NASA budget. (This is illustrated by NASA projections of contractor manpower, see Fig. 1.)

Opponents, generally taking a diametrically opposite view with respect to both of the arguments of the last two paragraphs, will view the shuttle as the foot in the door for a program involving an expanded number of launches not justifiable on either space ap-

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Footnotes at end of article.

plications or space science grounds, and more particularly, a program dominated by manned flight and involving a larger expenditure of public funds than the nation now seems prepared to buy.

We believe that that is the true import of the shuttle, that the nation should face up to the kind of space program it wants, and then consider the shuttle in that context. We believe that what the nation really wants is a program in which the primary emphasis will be on the exploitation of space for the betterment of life on earth through such activities as the use of satellites for better weather prediction and communication, and with a secondary emphasis on space science, objectives which can be achieved at relatively modest costs and with minimum emphasis on manned missions. The true case for the shuttle, if there is one, is in manned flight (or in military programs). To play down these aspects of the shuttle, as has been done, and to attempt to sell it as a cost-effective instrument for a civil program to be dominated by unmanned missions involving only modest levels of public expenditures is to mislead.

FOOTNOTES

[1] Economic Analysis of the Space Shuttle System by Mathematica, Inc., January 31, 1972, pp. 0–8.

[2] Appendix to Space Shuttle Fact Sheet, NASA, March 15, 1972, p. 3.

[3] Hearings on S. 720 for FY 1972 Before the U.S. Senate Committee on Aeronautical and Space Science, p. 142.

[4] See, e.g., Why Space Shuttle, and at What Priority, James Cook; inserted in Congressional Record for February 8, 1972 by Senator Alan Cranston, p. 3076.

[5] Secretary of the Air Force, Hearings on S. 720 for FY 1972 before the U.S. Senate Committee on Aeronautical and Space Science, p. 349. NASA Asso. Administrator for Manned Space Flight, *ibid.*, p. 388.

[6] Mathematica report, Table 6.7.

[7] Mathematica report, Tables 4.1 through 4.8 and Table 6.7.

[8] Hearings on S. 720 for FY 1972 before the U.S. Senate Committee on Aeronautical and Space Sciences, p. 143.

[9] NASA release, The Space Shuttle, March 15, 1972.

[10] Mathematica report, pp. 6–42.

[11] Statement to the Appropriations Committee, U.S. Senate, June 29, 1971.

[12] Space Shuttle Briefing to the House Committee on Science and Astronautics, Subcommittee on Manned Space Flight, March 16, 1972.

[13] Payload Effects Analysis, Lockheed Missile and Space Company, June 30, 1971, pp. 3–13.

[14] Mathematica report, pp. 6.2.

[15] *Ibid.*, Table 6.24.

[16] Secretary of the Air Force, Presentation to the U.S. Senate Committee on Aeronautical and Space Sciences, March 23, 1972.

[17] Statement of John E. Naugle of NASA before the U.S. Senate Committee on Aeronautical and Space Sciences, January 1972, Fig. SV 71–2406.

[18] Mathematica report, Table 4.9.

[19] Lockheed study, pp. 2–6.

[20] Mathematica Study, Table 6.20.

[21] Selected Disease Control Programs, September 1966, U.S. Department of Health, Education, and Welfare, Office of the Assistant Secretary for Program Coordination, p. 12.

[22] Statement of Von Eschleman on "The Advocates," April 11, 1972.

[23] Statement by John E. Naugle, Associate Administrator for Space Science, NASA before the Senate Committee on Aeronautical and Space Services, January 1972, p. 8.

[24] Secretary of the Air Force, Hearings on S. 720 for FY 1972 Before the U.S. Senate Committee on Aeronautical and Space Sciences, p. 363.

[25] Budget briefing, January 24, 1972, pp. 37–38.

Mr. MONDALE. Mr. President, at this point I yield such time as he may require to the distinguished Senator from Arkansas.

The PRESIDING OFFICER (Mr. STEVENSON). The Senator from Arkansas is recognized.

Mr. FULBRIGHT. Mr. President, I strongly support the amendment by the Senator from Minnesota (Mr. MONDALE), along with the Senator from Wisconsin (Mr. PROXMIRE), and the Senator from New York (Mr. JAVITS), to delete $227.9 million for development of the space shuttle from the NASA authorization bill.

As in previous years, I do not understand how we can possibly justify authorizing a large expenditure for the space shuttle project. The shuttle would cost as much as $8 billion over the next 6 years, and many times more in the following years. This is an extremely large expenditure for a project which can hardly be considered vital.

There are two primary considerations which should be involved here. First is the question of exactly what is the purpose of the space shuttle—indeed what is the purpose of our overall space effort? Second is the matter of priorities. Is this the wisest, most prudent investment of the taxpayers' money?

As the Senator from Minnesota has pointed out, there is no clear, coherent future policy for the space program. Many leading scientists have expressed strong doubts about the advisability of proceeding with the shuttle. We have already witnessed changes in the estimates of the cost, capability, and configuration of the shuttle. This continued shifting seems to betray uncertainty about its potential and purpose. There have been numerous inconsistencies in NASA claims about eventual costs and benefits.

As Dr. Ralph Lapp has stated:

One clear fact emerges from this pattern of shifting justification and changing designs; NASA desperately wants this multi-billion dollar project, and will seek any rationale to justify its development.

What we see, then, is a classic case of a program and agency in search of a mission. Instead of the normal process of presenting a clear and consistent justification for a program—and then seeking to fund it—NASA wants to develop this project on a "fund now, justify later" basis.

Prof. Brian O'Leary of San Francisco State College points out:

Time and time again configurations have been shifted or obfuscated.

The original concept linked the shuttle with a permanent manned space station as a stepping stone for manned flights to the planets. However, as Professor O'Leary recounts:

When this approach appeared unpopular, the shuttle became an end in itself—a $12.8 billion two-stage fully reusable system which could hoist more than two million pounds of manned and unmanned payloads into earth orbit each year.

This can be compared to the present rate of about 10,000 pounds per year of unmanned nondefense payload, barely sufficient to comprise 20 per cent of the capacity of one shuttle flight (one shuttle is thus capable of carrying four adult elephants into earth orbit). But when that price seemed too high, we are given a $5.5 billion-plus configuration which can perform essentially the same tasks as the $12.8 billion version, the only major difference being the booster is now expendable rather than reusable. And now the President's budget discloses that $5.5 billion is in fact an underestimate. . . .

Mr. President, from 1959 through fiscal 1973, if the current authorization request is approved, we will have spent about $72 billion for Government space activities. This includes funds expended both by NASA and the Department of Defense, as well as other agencies. This is a colossal amount and the figure will increase greatly in the years ahead if the shuttle is approved.

It should be emphasized that one of the main justifications for the space shuttle is its military potential. The predominant portion of our Federal budget is already going to the military, yet here is one more significant expenditure which should at least partially be charged to the military budget. The chairman of the Manned Flight Subcommittee of the House of Representatives recently said the space shuttle is "being designed with careful attention to the special requirements of the military services."

He continued:

We do not hear a great deal about military employment of satellites because of the classified nature of many of the payloads, but the Department of Defense launches space systems with greater frequency than does NASA, a factor which additionally underlines the need for shuttle development.

Noting that with the space shuttle "investigators will be able to accompany their experiments into space," he commented:

Here again, there is military potential. For some time the Department of Defense has sought to evaluate, in actual space flight, the role of military man in space. The shuttle can make possible such an evaluation.

Not many years ago the purpose of the American space program was "to catch up with the Russians." Now it is said to be a matter of "maintaining our superiority." Representative FREY, of Florida, recently said:

We as a nation cannot turn our back on the usefulness of NASA work to the national defense and the importance of superiority in space to our national security.

The arguments all sound familiar—the same claims that have been used, frequently without any basis, to justify support for weapons systems. We hear of new Soviet threats, increased Soviet spending. Consider some of Representative FREY'S comments:

I emphasize that the sufficiency of our investment in space cannot be determined merely in terms of domestic priorities but . . . by such major considerations as global power relationships . . . Without our military strength, and it goes without saying, a superior capability in space, this country will reach the point where we will no longer be able to emerge from a political confrontation with our foreign policy objectives intact . . .

In terms of the number of flights, the Soviet Union has surpassed the United States in annual missions in both civilian and military space flights every year for the past 6 years. And with regard to dollars budgeted, the continuing reduction in space investment in this Nation contrasts sharply with

the budget increases the U.S.S.R. has enjoyed . . .

NASA Administrator Dr. James C. Fletcher speaks in the same vein. He recently said:

My biggest concern is what the Russians will be doing. Will they have some spectaculars? The Russians seem to be devoting at least 50 percent more effort to space activities than we are, and three times as great a percentage of their Gross National Product. That's another reason it's so important to continue an orderly development of the shuttle without delay.

Mr. President, I have commented on numerous occasions about the fallacy of comparisons based on percentage of the gross national product. The GNP is simply not a valid measurement of the state of our society. It is an all-inclusive total which really tells very little about our ability to spend for one program or another. I have outlined in great detail the reasons why it is nonsensical to rely so heavily on the GNP.

I might also add that if the Russians have spent as much as we are told for space, and for missiles and various military activities, and radio broadcasts and other endeavors, I simply do not see how they could have any money left. I am reminded of all the exaggerated claims about the number of North Vietnamese and Vietcong killed in the war. As someone has pointed out, if the claims were true, everyone in Vietnam would have had to have been killed several times over. I am wondering if these claims about Russian spending are not in the same category. I do not believe rubles can be minted fast enough to be spent at the rate some would have us believe.

The truth of the matter is that we are spending very heavily on our space program and are being asked to commit ourselves to an extremely expensive program in the future for the space shuttle. Just the amount which is requested for the shuttle for this year and which would be deleted by this amendment—$227.9 million—is twice as much as the amount of Federal funds allocated to the 2 million people of Arkansas for elementary and secondary education, higher education, vocational education, and manpower training in the last fiscal year.

In announcing his support for the multibillion dollar space shuttle, President Nixon said the United States "has led and still shall lead" in space. It is interesting to recall that only a few weeks before the President's announcement he had vetoed as "fiscally irresponsible" a bill to extend the Office of Economic Opportunity's programs for 2 years and establish a comprehensive day care and child development program. That bill would have provided up to $2 billion—considerably less than the current NASA authorization bill—for child care centers for children of millions of working mothers. That was one of a dozen bills the President has vetoed, many of them for health and education programs.

In the beginning our space program was supposed to be for the purpose of getting to the moon first. At last count, eight crews of American astronauts have traveled to the moon. Ten Americans have walked on the moon, with complete and costly television coverage, while no Russian has yet stepped on the moon. Apollo astronauts have ridden buggies across the moon, but at the same time it was impossible to ride a passenger train in many parts of the country, including the entire State of Arkansas. Members of the Senate will recall that just 2 weeks ago a proposal to provide Amtrak rail service over routes which would have included two important cities, Cleveland and Little Rock, was rejected because of a shortage of funds. We were talking about $2 million at most. Yet the space shuttle's cost—for this year alone—is 113 times as great.

Mr. President, I think we have to be concerned about our problems on earth. The value and importance of the space shuttle must be weighed against the other needs in our society. I believe the shuttle simply cannot rank high on our list of priorities in view of the critical social and economic problems we face. In the past I have compared the cost of the shuttle to the funds available for the important Farmers Home Administration water and sewer system grants, so vital to the development of our smaller communities and for relieving the burden of our urban areas. The contrast is even greater than in the past. For fiscal 1973 the Nixon administration proposed to spend no new funds for water and sewer grants, proposing only to carry over the $58 million impounded this year—and not to spend all of that. Meanwhile, an estimated 34,000 towns of under 5,500 population lack adequate water systems and 49,000 lack adequate waste disposal systems.

I would also comment, Mr. President, that the opposition to the space shuttle funding does not represent an "antitechnology wave," as has been claimed by the NASA Administration, nor a lack of concern about workers, scientists and technologists in the aerospace industry. As I stated during the consideration of the SST, it is a case of applying the manpower, talent and skill, as well as the money, toward more productive purposes which will be in the broad interest of the American people.

Mr. MONDALE. Mr. President, will the Senator yield?

Mr. FULBRIGHT. I yield.

Mr. MONDALE. I am glad that the Senator made that point, because one of the arguments used against those of us who are trying to strike out the shuttle is that we are antiscience.

In fact, the Space Science Board of the National Academy of Sciences concluded that this shuttle could not be justified on the basis of scientific or utilitarian uses. In addition, the Federation of American scientists has just gone on record with a strong statement condemning this project. Dr. Ralph Lapp, a most distinguished scientist, opposes it. Dr. Van Allen and other specialists in the field have also strongly criticized this proposal. I think they ought to persevere. Just the other day, Peter Jones, a top space analyst from Pratt & Whitney—who had analyzed the space shuttle program—made this observation: He said, "The space shuttle is one of the most wasteful and poorly planned, dead-ended multibillion-dollar space age boondoggles of this century."

This is fresh information from responsible sources.

Mr. FULBRIGHT. Mr. President, the Senator could not be more right. And there are so many things, so many other areas where there are crying needs for immediate attention in this country. There is no question about the need for technologists or scientifically trained people for useful purposes.

Mr. MONDALE. No question about it. As a matter of fact, even this year, NASA is starting to steal money away from the scientific parts of the space program—such as missions for the unmanned exploration of outer space—in order to put money into this shuttle. So even this year, we are diminishing the scientific thrust of the space program in order to bankroll this unneeded shuttle.

Mr. FULBRIGHT. What NASA wants to do is to get the shuttle to the point where they think it will be difficult to cut it off.

Mr. MONDALE. That is an old game around here. Later they will come in and say, "It may be bad, but we have spent so much money on it, let's spend a little more."

Mr. FULBRIGHT. That is right. That was one of the big arguments on the SST.

Mr. MONDALE. And the carrier.

Mr. FULBRIGHT. It is absolutely phony, but as the Senator says, it is an old argument here.

Now that the Senator has brought the matter up, yesterday I had lunch with an acknowledged expert in fuel and energy. With the clear, unquestioned data about the growing shortage of energy in this country, I asked him how much was being spent on projects such as the conversion of coal into gas so it could be more readily used. He said, "I think a total of about $20 million for research in this kind of program." Yet he is certain that if we do not do something very dramatic in accommodating the growing shortage of energy, the whole country will grind to a stop.

Yet we continue to spend large sums of money on things like this shuttle. The absurdity of this distorted sense of priorities is unbelievable. Our present condition appears similar to a Greek tragedy—we move on toward disaster, yet we continue on the same course. It is similar in some respects to the kind of policy we have pursued in Vietnam. There is a kind of madness afflicting us regarding what is important and vital to the country. This is just the most current example of the complete sense of unreality that is exhibited.

It is like the case of the man who has everything and you try to think of something to give him. Maybe you could give him a shuttle. If we had no urgent requirements for health, education, transportation, energy, pollution control, and were just looking for something to do, perhaps we could say, "Well, this might be a nice, interesting gift; it might even make a good television program." But that is about the degree of urgency I attach to the space shuttle. To me, it is such

an absurd thing it is difficult to argue about. I sometimes feel a little foolish making an argument on something that strikes me as being so self-evident.

Finally, Mr. President, I would like to refer to two recent editorials in Arkansas newspapers opposing funding for the shuttle. The Northwest Arkansas Times at Fayetteville, analyzing the cost projects for the shuttle concluded:

The sum of the affair reminds us a little of the bargain-conscious housewife who buys 100 pounds of potatoes when she needs only one for the stew, because spuds are 10 cents a pound cheaper that way.

The Arkansas Gazette suggested, and I completely agree, that with the shuttle we "may get into another of those open-ended commitments that have so distorted our national priorities and human values."

I ask unanimous consent, Mr. President, that the editorials from the Northwest Arkansas Times of April 18 and the Arkansas Gazette of April 24 be printed in the RECORD.

There being no objection, the editorials were ordered to be printed in the RECORD, as follows:

BARGAINS

It is instructive, in understanding President Nixon's system of New Economics to listen closely while Ralph Lapp, a technical writer of matters of nuclear physics and space science, explains the "savings" that the President's proposed space shuttle system will produce for the U.S.

In announcing his endorsement of NASA's space shuttle program early this year President Nixon, you may recall, explained that "economies" made possible by the new launch system in the 1980s might bring costs down to one-tenth those of present launch vehicles (such as Apollo 16) which are used only once.

NASA, said the President, estimates that the cost per pound of putting a payload into orbit would drop from $600 or $700 to less than $100.

Writer Lapp, testifying before a congressional committee last week, clarified NASA's figures. The real cost of putting a payload into orbit using the space shuttle, says Lapp, based on NASA's own figures, will be about $5,100 per pound.

Lapp explains this differential of 510 per cent as a matter of arbitrary comparison. The space shuttle system is only cheaper than a more expensive program, in other words. In this particular instance, says Lapp, the computations go like this (pay close attention, because it's a little tricky):

Cost projections prepared for NASA by the space hardware industry (which is more than a little interested in making the project look good), indicate a $7 billion savings for the space shuttle when compared to the estimated cost of a program (which is technically fictitious, since it has never been proposed or authorized) using conventional one-shot launch vehicles. The latter program would cost an estimated $42 billion, the shuttle system "only" $3 billion. Ergo, a $7 billion windfall for the U.S. Treasury.

Lapp adds that, figured another way, a cool $19 billion can be saved by NOT using the space shuttle system and carrying on a less ambitious program with existing hardware.

The sum of the affair reminds us a little of the bargain-conscious housewife who buys 100 pounds of potatoes when she needs only one for the stew, because spuds are 10 cents a pound cheaper that way.

A bargain, as they say, is a bargain.

SPACE SHUTTLE COSTS

It was only a matter of time before someone with expertise in the field got down to evaluating the figures used by the Nixon administration in justifying its go-ahead for a space shuttle program.

First in line is the noted physicist, Ralph E. Lapp, a prolific student of and writer on nuclear, space and related affairs, in an appearance recently before the Senate Space Committee.

National Aeronautics and Space Administration officials around at the time of President Nixon's announcement early this year estimated that the cost per pound of putting a payload into orbit would drop with use of the proposed reusable space shuttle vehicles from $600 or $700 a pound to $100 and perhaps $75.

Dr. Lapp, using projections made by private sources for NASA, said the real cost instead would be $5,100 a pound for launches in the 1979–1990 period. Taxpayers, according to Lapp, can save $19 billion during the 1980s by not building the shuttle and by using existing rockets for "a rational space program". We are not so sure that at this point in time the country can even justify expenditures at the rate required even for existing rockets, but Lapp's point nonetheless is well taken.

If the United States is indeed to undertake the space shuttle the least we all should ask is what probable costs we are going to have to bear for supporting it. Testimony such as Dr. Lapp's suggests that we simply may get into another of those open-ended commitments that have so distorted our national priorities and human values.

Mr. FULBRIGHT. Mr. President, this argument, of course, is like arguing about the Vietnam war. That has been going on for some 10 years now, and the space program has been going on a little longer. It goes back to the days of sputnik. Sputnik set us off on a program which has grown and grown until it has developed its own momentum.

I have no idea what the Senate will do, but I for one want to make it very clear once again that this seems to me to be a gross distortion of the priorities of this country. Goodness knows our money is limited enough. I do hope that the Senate will consider this matter most seriously, and support the amendment of the Senator from Minnesota.

Mr. PROXMIRE. Mr. President, will the Senator from Minnesota yield me 5 minutes?

Mr. MONDALE. I gladly yield 5 minutes to the Senator from Wisconsin.

Mr. PROXMIRE. Mr. President, there has been a lot of discussion and debate in this country during the last 3 or 4 months, and a lot of analysis, as to what the results of the primary elections mean.

They mean a number of things, but one thing they mean, loud and clear, is that there is a real tax revolt in this country. People are fed up with the kind of taxes they have to pay, especially the working people and those making $9,000, $10,000, or $12,000 a year.

Mr. President, we are engaged right now in debating an amendment, and the fate of that amendment will determine whether or not we are going to have a very expensive space program, or one of more modest dimensions. If we go ahead with this shuttle, this is just a beginning of a commitment that will make it virtually impossible to resist continuing the program in the future. It will mean that next year it will be bigger, the next year bigger still. It will mean first hundreds of millions of dollars a year, and then billions of dollars a year.

I think we have to recognize that the best analysis that we can get of our needs over the next 4 or 5 years indicates that we might just as well assume we will have no funds available for new programs unless we increase taxes. I think it may very well be that we should, and I think a strong case can be made for increasing taxes, but not a realistic case, because not many of the people of this country want higher taxes. That being the case, we have to start saying no somewhere, and I think there are many areas that we should be careful about.

The Senator from Minnesota (Mr. MONDALE) is not asking in his amendment that we cut out the space program, that we eliminate it. He is asking that we exercise judgment about it, and for the time being concentrate on instrumented exploration of space.

The $227.9 million request is only the tip of the space shuttle iceberg. NASA itself estimates the ultimate development and investment cost for the shuttle will reach $8 billion; and the total program cost over a 12-year period will be $35 billion. These are the real cost figures and the ones we should consider.

These are the reasons why I think we should be very careful about proceeding with this program and why the Mondale amendment makes sense.

The next manned space flight marks the end of the Apollo moon missions. This has been a highly exciting period in space exploration, but with its conclusion the United States enters an unplanned and uncertain future. There is simply no clear objective or logical policy for space exploration, and, as NASA itself recently acknowledged, "the United States has not approved in detail any space program for the 1980's."

The reason for the absence of clearly defined policy is complex, but two very obvious reasons are apparent. In light of the multitude of social problems here at home, many Americans cannot justify a multibillion dollar investment in celestial space rides. The poor, the infirm, and the uneducated demand the attention and the support of American leaders and American dollars. Also, it is difficult to decide on future goals until we have properly digested the wealth of information gained through earlier flights. The American space team has shown courage and brilliance in opening the mysteries of the moon, but those secrets are now at our feet and we are uncertain as to which new worlds we should conquer next. Until that decision is made, and only when Congress has approved a long-range space program with a well defined cost estimate, should we consider this multibillion dollar space shuttle.

But besides the absence of a coherent policy for future space exploration, there arises the question of utility. President Nixon, in a statement on the space shuttle on January 5, 1972, stressed the economic value of the shuttle, saying:

The new system will differ radically from all existing booster systems, in that most of the new system will be recovered and used again and again—up to 100 times. The resulting economies may bring operating costs down as low as one-tenth of those of present launch vehicles.

Taking this at face value, there would be no disagreement. We all welcome a 90 percent saving wherever and whenever we can get it. With taxes and inflation at an all time high, it is a welcome relief. Indeed, the fact that the shuttle would be reusable up to 100 flights is the chief argument raised to support the shuttle instead of expending money periodically for one-shot boosters. But will we really save money as shuttle supporters claim? Two years ago, the Rand Corporation, at the request of the Air Force, completed a study of NASA's shuttle plans. Rand's conclusion: the shuttle would be cost effective if the space agency proceeded with plans for a $141 billion space program between now and 1990. That is what we are talking about—$140 billion.

Mr. President, as I have already indicated, we are not yet committed to such a costly program. In order to amortize the cost of the shuttle, according to the Air Force's own study, we would have to more than double our current space spending. We would have to spend $7 billion a year just to justify the shuttle's existence. In other words, we cannot consider the $8 billion cost of the shuttle alone, though that is a high price tag to be begin with, but we must be willing to throw in another $141 billion just to make the first eight worthwhile. Are we not putting the cart before the horse? Where has the President's 90 percent cost savings disappeared to?

Finally, I believe that this country has made a marvelous breakthrough in space exploration. NASA has shown courage and foresight in the planning of the Apollo program, and the Mercury and Gemini programs before. I very much believe that we should continue to lead the world and the scientific community with a well-designed and well-equipped space program. But I am convinced by leading experts in the field that we can do it for less money. Unmanned space flights could achieve a great deal, almost as much as manned flights, but would bring the price of our extremely active space program to $2 or $3 billion a year without cutting back on missions.

If we proceed with the $8 billion space shuttle, we would also have to commit ourselves to the $141 billion program necessary to justify it. Such an expenditure would represent $2,800 for every American family. Is that not just a bit too high? I sincerely believe that without such a shuttle we can easily maintain a space program of the highest caliber and still retain the funds so urgently needed for the problems here at home. Therefore, Mr. President, I call on my colleagues to vote for the Mondale amendment to eliminate authorization for the space shuttle.

Mr. MONDALE. Mr. President, the only basis for the space shuttle is that it provides a cheaper system, it is alleged, for transporting men or materials into near earth orbit. In fact, it will cost at least three times more to do so than the most efficient existing expendable boosters. NASA says it will cost $100 a pound. Independent scientist Ralph Lapp and the report of the Federation of American Scientists estimate—using NASA's own figures—that it will cost $2,250 a pound.

So on the cost-benefit argument, which is the only reason for this shuttle, NASA loses 3 to 1.

I thank the Senator from Wisconsin.

Mr. CANNON. Mr. President, I yield to the Senator from California.

Mr. CRANSTON. Mr. President, I should like to point out some of the advantages of the space shuttle. But before I do, I should like to comment on some underlying attitudes and objections to the shuttle program.

I believe that part of the opposition to the space shuttle stems from a conviction that our national priorities need reordering. I share that conviction. Our defense budget has been overstuffed at the expense of social programs. The Vietnam war has already cost us five times more than what we spent on the entire Apollo program. We lose substantially more through tax loopholes each year than we spent in 1 year to go to the moon, and yet we still hear voices questioning this magnificent achievement. Billions upon billions of dollars are thrown into our bloated military budgets, with nothing but waste, destruction, and death to show for them.

I fully support moves to reorient our priorities of focus on our poor, our elderly, our minorities, our veterans, our cities, our transportation, our medicine, and a whole range of social action programs. But at the same time I do not believe that the space program should become a scapegoat because it is so visible. But I remind Members of this Chamber that the money spent on space research and technology is a tiny fraction of existing social action programs. The 1972 Federal budget, for example, called for spending $3.2 billion on space research and technology and $100 billion on income security, health, veterans' benefits and services, education and manpower, and community development and housing. And in turn, the money spent on the space shuttle is a fraction of total space spending.

As my distinguished colleagues know, the proposed shuttle is a new space transportation system involving a piloted, reusable orbiting vehicle and a retrievable booster or launcher. At present, launching rockets and vehicles are lost with each shot into space. With the shuttle, crews of scientists and technicians onboard the orbiter can launch unmanned satellites and space probes, conduct observations and experiments, and retrieve satellites while in orbit. Once the mission is completed, the orbiter will land like an airplane. The point to remember is that its parts are reusable.

After development, the shuttle will save money in several ways. The cost per mission will be less than most existing launch vehicles. The cost per pound in orbit when fully loaded will be about $160, as contrasted with $900 to $5,600 per pound for conventional launchers. Savings are estimated at $13 billion over 12 years, or slightly over $1 billion per year.

It is clear to me that the $227.9 million set aside for the shuttle in the present bill is a money-saving investment. The basic fact is that the shuttle is designed to save money. But there are other facts, too. Additional cost savings can be effected through the following:

The recovery, repair, and reuse of malfunctioning satellites by the shuttle orbiter;

Less expensive designs and manufacture of satellites by eliminating the need for duplicated systems within the satellite in the event of failure;

The ability to dispense with the higher costs associated with miniaturization, which is difficult to develop and test; and, finally,

The versatility of the shuttle and the wide variety of missions which it can serve, namely, satellite placement and return; space rescue; future space station support; research on the space environment; delivery of propulsive stages and payloads for high-energy missions launched from low-earth orbits; short duration sky-viewing missions; film recovery; and more.

Mr. President, this versatility means that the shuttle will replace most expendable launch vehicles. It will probably be available for future use by commercial groups, other government agencies, foreign governments, and a variety of international organizations.

Thorough studies of the economic feasibility of the shuttle were undertaken by Mathematica, Inc. Their report shows that over a 13-year period the return on investment should be 10 percent for a projected 500 flights and 15 percent for 700 flights. The study commented that even a 10 percent return is "among the highest discount rates ever applied in the evaluation of public investments in this country." Even with only 39 flights per year the shuttle would be economically justified, whereas the actual number planned by NASA and the Department of Defense is roughly 56 flights per year.

It is important to remember that space flights are going to take place anyway—unless we scuttle the entire space program, which is obviously not going to happen. Our job, then, is to find the least expensive way of operating them. The space shuttle is clearly the answer.

Of course there are different opinions on the cost-effectiveness of the shuttle. That is a healthy sign. Critical analysis by nonbelievers is exactly what we need in a decision as important as this.

Dr. Ralph Lapp, an eminent scientist for whom I have the greatest respect, is one of these critics. He has many doubts about the space shuttle project which he expressed very cogently in testimony before the Senate Committee on Aeronautical and Space Sciences. But both Mathematica and NASA made a point-by-point response to Dr. Lapp's analysis, and I submit that the cost-effectiveness of the shuttle remains unshaken.

I am not trying to say that the final word on this subject has been spoken. NASA is not omniscient. No one is arguing that the subject is closed. Continuing cost and feasibility studies will be made by the NASA–DOD Joint Space Transportation System Committee and other groups. In fact, Robert C. Seamans, Jr.,

Secretary of the Air Force, told the House Subcommittee on Manned Space Flight that a clearer view of costs, capability, and operations must wait until December 1973. Even then, future flight tests of prototype vehicles may modify cost estimates.

I am aware that the uncertainty of exact future costs is used as an argument against passing the current request. We have all been burned by scandalous overruns in weapons programs and aircraft contracts. But NASA and the Air Force have been completely open in their testimony, as have other organizations involved. There has been no attempt to hide any of the facts of the space shuttle project. In extensive hearings in both the House and the Senate space committees, the shuttle project has been submitted to sharp questioning. From past performance, I think that we can give high marks to the way NASA has handled the many space projects under its authority. Its achievements over 10 years have been made within budget allowances and on time. I believe that we should continue our trust in this agency by proceeding with a vitally important and money-saving program without further delay.

Mr. President, some opponents of the space shuttle go beyond cost arguments to assume that space technology does not contribute to the improvement of life here on earth. Nothing could be further from the truth. Let me cite a few examples.

Our Nation is almost surely heading toward an energy crisis. We face the joint dangers of dwindling supplies of gas and oil and possible radioactive poisoning from nuclear energy. Yet we know that every day the sun produces 1,000 times as much energy as all of the energy sources on earth.

Harnessing the energy of the sun could well save the world from suffocating under a blanket of air pollution. We have already launched seven orbiting solar observatories. We have been gathering vital data about the effects of the sun on the earth's life systems. Theoretically, we could tap the sun's enormous heat energy with a solar energy station in space and transmit that energy in beams to the earth.

To cite other examples, sensors developed for use in space are already being used for infants with breathing problems. An instrument measuring muscular tremors, originally developed to record the impact of micro-meteorites on space vehicles, aids the early diagnosis of neurological diseases. Waste and sewage disposal systems are being adapted to utilize collection, processing, and disposal techniques developed by space technology. Earth resources satellites are already helping farmers to detect crop diseases and to protect their crops from weather disasters. Similar satellites can serve fishing fleets by detecting large schools of fish as well as the pattern of currents and tides. Weather satellites will soon be able to make accurate weather predictions as much as 2 weeks in advance. And speaking of satellites, I am sure that many of my distinguished colleagues enjoyed watching the Olympic games from Japan—live via satellite.

For advances such as these it is only a short step toward understanding the shuttle's enormous peacekeeping potential. For example, there has been a proposal to establish a U.N. Fact-Finding Center utilizing the latest photographic and electronic observation technologies. In any given conflict, photographs obtained from U.N. reconnaissance planes could be changed by laser scanning into electronic impulses, which would then be beamed by satellite to world peacekeeping councils. Detection of cease-fire violations and arms buildups could be detected instantly. Leaders around the world could be directly in touch with on-the-spot developments. In the field of arms control, monitor satellites would help the cause of peace by serving as watchdogs. International agreements regulating environmental pollution could be monitored in a similar way. All this is in addition to the breaktaking educational potential of the satellites, through which the world's illiterate could be educated. I understand that the Indian Government is already deeply interested in this uplifting idea. I am not suggesting that the space shuttle will do all these things. I am stating that satellites, serviced by the space shuttle, will do these things better. I do them less expensively. Mr. President, I will summarize by restating my belief that the space shuttle is cost-effective, that it promotes social environmental goals, and that it will help break new paths to world peace.

Let us leave death and destruction behind us.

The shuttle will help us to find our way ahead.

Mr. CANNON. Mr. President, I yield to the distinguished Senator from Florida.

Mr. GURNEY. Mr. President, this is the third time that opponents of the space shuttle have sought to knock out money in this bill. They are the same arguments, the same shopworn fallacies, and they do not go to the point of the matter at all. As a matter of fact, in the House of Representatives this year, the effort to knock out the money garnered only 11 votes, just a few days ago.

Mr. President, at the outset, I commend the distinguished chairman and members of the Committee on Aeronautics and Space Sciences for the excellent service that they have performed in analyzing, modifying, and reporting out the NASA authorization for fiscal year 1973. They have managed to navigate the fine line between keeping costs down to a minimum while at the same time not endangering any of these programs which are so very important to this Nation's future as both a world power and as the most technologically advanced nation in the world.

The present admendment introduced by the distinguished Senator from Minnesota (Mr. MONDALE) is essentially a replay of amendments which he has introduced in past years. It seeks to have the Senate and the country turn its back on its future, on man's last and most immense physical frontier. It represents a negativism which is unfortunately enough all too pervasive today. It expresses a defensive attitude toward our national existence, a loss of confidence in ourselves, a loss of desire to control our own destiny.

This amendment seeks to remove from the authorization for NASA for fiscal year 1973 money needed to begin the development of a working space shuttle system. Two arguments have been raised by the critics of this system. The first criticism is that at this point in time we need to reorder our priorities and emphasize other programs.

In regard to this argument, I am content to simply point out that one of the most extensive, published blueprints for changing national priorities is one entitled "Counter Budget 1971–76" which was prepared by the National Urban Coalition. This organization expressed no desire to delete the space shuttle system. Rather, the coalition recommended a lengthening, a stretching out, of the development and operation of the shuttle so that NASA's budget would not exceed $3.8 million a year. This is exactly what the administration has done. It is exactly what the House of Representatives has done. It is exactly what the distinguished committee in the Senate has done.

As to the second criticism question, the basic validity of the shuttle concept itself, much can be said. The space shuttle will be an entirely new way of getting to and from space. It will be an airplane-like vehicle, which unlike present rocketry, can be used and reused with a concomitant reduction in cost per flight. Indeed, NASA has estimated that a 12-year benefit saving realized from the proposed shuttle investment will exceed $5 billion by 1990. The average total cost for launch and payloads projected for the 12-year period of 1979–90 would be about $4 billion using conventional launch vehicles and about $2.9 billion with a shuttle, based on current levels of total space budgets for NASA, DOD and other agencies.

The economy is implicit in the large load-carrying capacity of the proposed shuttle configuration. This vehicle would be the basic launch system for all kinds of space satellites and planetary probes. It would, therefore, allow a manufacturer to build less expensively engineered, less miniaturized, less delicate satellites for perhaps one-half to two-thirds of present costs. This is especially true since these instruments would not have to be built for a long, unattended life span. The orbiter could carry men to routinely service, repair, or retrieve these increasingly expensive orbiting instruments.

For example, the $75 million orbiting astronomical observatory whose batteries went dead, thereby providing no return for that investment, just might have been saved.

Much has been made of the expense of the program, and I believe that some of the remarks, that I have already made, indicate that in the long run the space shuttle will provide more return per dollar than continuation of present conventional systems. These examples and the position I have taken is borne out by an independent study by Mathe-

matica, Inc., which shows a potential saving greater than the $5 billion which is the conservative NASA estimate.

Moreover, all these cost-benefit analyses take too little account of one of the principles of transportation systems in general—that is, as transport becomes more frequent, faster and less expensive, it attracts more traffic. In this case having a shuttle system would therefore lead to even further cost-savings and other benefits because of the real possibility of increased usage.

In the long run, programs such as the space shuttle which increase our superiority in high-technology areas, are exceedingly important, and in fact, are a necessity. We have watched competitive nations in the world community rise above us in numerous areas of industrial competence. We have let our export-import balances sink rapidly into the worst negative balances of the century.

Far from becoming an equal opportunity employer, we are becoming an equal opportunity unemployer. Training and education are becoming less and less important in avoiding unemployment, welfare rolls and poverty status. This is a national illness which must be cured, and the way to cure it is to restore our competitive position in the world market, to restore our exports and thereby restore the jobs related to them. We cannot do that and turn our back on high-technology areas of research and development. We cannot do that by turning our back on the immense scientific potential of man's controlled exploration of space.

There is one proviso, however. For, to remain competitive, there are, in fact, two options available to us. We can continue to maintain our technological superiority and restore balance of payments through the exporting of high-technology products. Or, we can remain competitive by turning our back on technology and drastically reducing the wages of the American worker.

No one in this Chamber could support that latter position. Yet, what the advocates of an abandonment of technology would accomplish is exactly that.

The American worker is the highest paid worker in the world. I also happen to think that he is the best, most skilled, most conscientious worker in the world. I think that he should retain his position. Yet, these higher relative labor costs are most readily absorbed in products involving high technology. Were we forced to compete with say fabrics, the mills of Japan for our sole dollar exports, we would lose unless our workers were making Japanese scale wages.

Thus, amendments such as the one proposed here today do far more than turn our back on what could be a glorious future for this Nation and for man in space. The ultimate and unerring result of such amendments, the ultimate and unerring result of the elimination of programs designed to enhance our competitiveness in the areas of sophisticated technology, is the abandonment of the American working man to lower relative wages, if not permanent unemployment. I, for one, do not want to see us delete budgetary provisions for programs such as the space shuttle only to have to turn around a year from now and appropriate more money to keep people from starvatioin because they are unemployed. It makes absolutely no sense to devote increasing amounts of national resources to provide sustenance for people who are unemployed because we have, in the name of cutting costs, deleted programs which could stimulate the economy sufficiently to give these people jobs.

One of the best features of the shuttle, in view of the importance of maintaining technological superiority, is that it could well serve as a unifying goal for such technological advancement. The developments and spinoffs from such a program would have major impact in the areas of propulsion, metalurgy, electronics, meterology, ecology, and the medical sciences.

I have spent considerable time discussing costs and technology in this discussion because I believe strongly that we must continue technological development in the most economic manner, if our nation is to progress. Historically those nations that have failed to develop their technologies have lost their ability to maintain and raise the quality of life of their citizens.

Sir Bernard Lovell, director of Britain's Jodrell Bank Observatory, offered a significant word of caution:

> If you look at the thousands of years of civilization, you will find that only those communities that have been prepared to struggle with the nearly insolvable problems at the limits of their technical capacities—there are the only communities, the only times, that civilization has advanced. The Roman Empire decayed when it ceased to be progressive in this sense, and there are other examples. To a certain extent, you see the beginnings of it in the United Kingdom today, but fortunately, not in the United States, and certainly not in the Soviet Union.

I ask Senators which course they wish to choose.

Mr. President, much of the opposition to the shuttle program is related to something that Mr. Lawrence Lessing, a science writer who recently discussed the shuttle in Fortune magazine, refers to as "the anti-man in space syndrome." Since the 1960's such people as Dr. Thomas Gold, a key supporter of the efforts of the distinguished senior Senator from Minnesota, has been promulgating such theories as the contention that the moon might have such a deep covering of dust in its seas that our astronauts would sink soundlessly into it and never return. The success of the Apollo program has of course dispelled that fear. More recently, Dr. Gold, in a New York Times Magazine article concluded that man should give up space life because of harrowing psychological effects of prolonged weightlessness, effects which, needless to say, have in no way been borne out.

Throughout the history of man there have been doomsayers, those individuals who have said "Let us not go farther else we shall suffer destruction." I am sure these people were around when man first decided to harness the energy of fire. I am sure that they were around when the Phoenicians developed ships to set sail and trade throughout the Mediterranean Basin. I am sure that there were counterparts of the supporters of this amendment in the court of Queen Isabella who told her that the money obtained from pawning her jewels could be better spent elsewhere, that she should not invest it on Columbus' trip, because after all everyone knew that there was nothing on the other side of the world and that his venture would inevitably fail.

Mr. President, I submit to you that the history of mankind is an uninterrupted history of the achievements of those who have ignored the doomsayers and brought increased benefits to all mankind. We as a nation cannot afford to turn our backs on the future. We as a nation cannot afford to abandon what technological superiority we still muster and retreat to the point where we become a second-class power, a nation increasingly relegated to the backwater of history, a nation which cannot compete either in military might or in trade competition with its neighbors.

Mr. President, I submit that the Senate, Congress, and the Nation are not prepared to forfeit our place in the history of man. We are not prepared to join with the supporters of this amendment and turn our back on the immense frontier of space.

Mr. President, I submit that the only intelligent, rational choice for us is to proceed with the proposed, and exceedingly moderate, program of development of a space shuttle and to defeat the pending amendment offered by the Senator from Minnesota.

Mr. CANNON. Mr. President, I yield to the distinguished Senator from Texas.

Mr. TOWER. Mr. President, I oppose the Mondale amendment, because I think it would mean the end of a program that promises even more expanded ancillary benefits than we already have realized from the space program. The program can have a great benefit to people throughout the world. Already, the ancillary benefits that have accrued to the American people have been legion in the field of medicine, in the field of communications, in the field of electronics, and in many other fields.

Mr. President, nearly 10 years ago, President John F. Kennedy pledged that we would have a vigorous space program and that we would put a man on the moon in the decade of the 1960's. Although at the time that he spoke, no American had flown in earth orbit, few believed that we would not make that goal. With the American expertise and devotion to a goal, everyone readily accepted the fact that we would go to the moon successfully. Such was the confidence of the 1960's.

In the ensuing years, Mr. President, we have had the doubter appear and question the space program, as they have doubted nearly everything else in America. The resounding answer of the American people to these doubters has been to show them that we still have the determination and the desire to be the best and that we will continue to be the best. As we enter into the next generation of spacecraft, specifically the space shuttle, we will continue to have

outstanding achievements in our program and outstanding men to perform them.

No one can forget that historic day of July 20, 1969, when there came from the moon, "Tranquility base here, Eagle has landed." We have come a long way since then and we will go a lot farther.

We have only one manned flight to the moon still remaining in the current series. It may be quite a while before we return there; but we will go back, because we have more yet to learn for the benefit of all mankind. In the decade of the 1970's, we will be conducting manned flights in close proximity to the earth and will, as a consequence, be learning a great deal more about our atmosphere and the environment of our planet. The space shuttle will enable us to do this exploration more often, with greater ease and much more cheaply than would otherwise be the case. To use an old expression, to destroy the space shuttle program, as is proposed by the Senator from Minnesota, would be penny wise but pound foolish.

The space shuttle will give us routine access to space, and offer substantial economies in space operations. Satellites that are dead because of component failure can be recovered and repaired. Others which have completed their mission can be retrieved, refitted, and reflown. The shuttle will also give us a rescue capability. It will further provide logistic support to orbiting space stations, bringing relief crews, fuel, and consumables. Or it can be used as a spacecraft itself for multipurpose, short duration missions—in what is called its sortie mode.

Because the shuttle will reduce substantially the costs of operating in space, it will be possible to consider other missions which would be out of the question at present cost levels.

Mr. President, the space program has been of significant benefit to Americans not only in the scientific data that it has recovered and the understanding it has given us of our earth and our universe, but also in the improvement of everyday life. For example, the creation of life support systems for space flights has sharpened the understanding of human organism needs and functions. This has led to the development of life support techniques in our Nation's hospitals that have undoubtedly saved many lives. In the field of transportation, advanced navigational techniques developed for spacecraft have been adapted for use by commercial aircraft, making these flights more sure and certainly more safe. In the area of weather forecasting, particularly storm and hurricane tracking and forecasting, the use of satellites has given many more hours of advanced warning to threatened areas, thus giving the civil populations many more hours to protect property and save lives. These are just a few of the many benefits that we have derived from the space program. I ask unanimous consent that a list of these benefits be printed at the conclusion of my remarks.

The PRESIDING OFFICER. Without objection, it is so ordered.

(See exhibit 1.)

In conclusion, Mr. President, the space program has been of great benefit to this Nation and will continue to be. The space shuttle, which is threatened by the pending amendment, is a very important part of the overall program and is necessary for its continued success at the least possible cost to the American taxpayer. I believe that it would be folly to deny NASA the authority to proceed with the program, and I urge the Senate to reject the amendment of the Senator from Minnesota.

EXHIBIT 1

BENEFITS FROM THE SPACE PROGRAM

Neil Armstrong's first step for man was indeed a giant step for mankind. The space program benefits mankind through:

IMPROVED HEALTH CARE

Creation of life support systems for space flight sharpens understanidng of human organism needs and functions.

Methods have been adapted for the continuous simultaneous automatic monitoring of intensive care patients.

Medical application of micro-meteoroid detector on spacecraft can measure change in heartbeat or tremors from parkinson's disease.

"Telemedic" service utilizing space developed sensors provides immediate electrocardiogram analysis through telephone lines for post-coronary and rural patients.

Moonwalking simulation device aids physically handicapped to walk.

Sensors developed for the space program enable amputees and paraplegics to activate wheelchairs by simple head/eye movement.

Other equipment enable doctors to determine the condition of accident victims through wireless monitoring from ambulance to hospital, enabling immediate treatment on arrival.

SAFER TRANSPORTATION

Commercial jetliners use same basic guidance and navigation techniques as spacecraft.

Grooving techniques developed by NASA for aircraft runways reduce skidding on highways.

Adapting astronaut couch shock absorbers to highway guardrails and vehicle bumpers provides greater margin of safety to driver.

NASA research has provided fireproof materials and paints and high performance lubricants which have been applied to commercial transportation.

NEW/IMPROVED MATERIALS, PRODUCTS, AND PROCESSES

Fireproof materials developed by NASA provide greater safety to firemen, hospital workers and auto-racers.

Low and high temperature materials and insulations resulting from NASA research are utilized in cooking ware and camping equipment.

Lightweight, strong fiberglass-plastic composites used for boats, surfboards, plumbing, tanks, and printed circuit boards were originally developed for the space program.

Miniature nickel-cadmium batteries developed for Apollo missions are used in electric wrist watches and small appliances.

Transparent film developed for the space program is used for packaging meat and cheese.

Miniaturized electronics developed for the space program are being used in radios, TV's. computers.

MORE EFFECTIVE LAW ENFORCEMENT

Computer techniques developed for the space program provide methods for a national central data bank with rapid access which aids in criminal apprehension and conviction.

Communications satellite will relieve existing police communications problems by increasing the number of available radio bands.

TIMELY WEATHER FORECASTING

Accurate hurricane warnings in the last 10 years through the use of weather satellites have saved thousands of lives and reduced property losses greatly.

Improved weather forecasting will save farmers millions of dollars by allowing better planning.

LESS EXPENSIVE WORLD-WIDE COMMUNICATIONS

World-wide live TV coverage via communications satellites brings international news and sporting events into the home.

World-wide telephone communications at one-fourth the former cost are available as a result of communications satellites.

INCREASED PRODUCTION OF FOOD-FIBER-FOREST PRODUCTS

Observations from orbiting spacecraft will improve the quality of land in production and increase yield.

Decrease losses through advanced warning of disease, insect infestation, forest fires, and natural disasters.

Increase quantity of land under cultivation (only 1/3 of the useable world land area is currently productive).

BETTER USE OF WATER RESOURCES AND OCEANS

Better fishing productivity will result from detection of fresh fish oils, vapors, and favorable thermal conditions.

Spacecraft systems will improve the identification of new water sources and the management of existing fresh water supply.

Spaceflight pictures of water sheds will be taken to improve methods of flood control planning.

POLLUTION

Detection of pollution patterns and sources will aid in development of pollution control procedures.

Improved understanding of man's relationship to his environment will result from satellite remote sensing.

Improved pollution abatement equipment has been developed as a result of space program research.

ECONOMICS

The majority of the money spent for each moon landing mission provides salaries for thousands of American workers throughout the United States.

More money is spent each year on cosmetics than on the space program.

The American space program costs you five cents a day.

The above list is only the beginning of the many direct and indirect benefits obtained from the space program. Hundreds more products and services you will be using tomorrow are being perfected today on the way to the next mission.

For further information please contact: Mr. Loren E. Wood, TRW Systems Group, Space Park Drive Houston, Texas 77058 Telephone: 488-3530 (A/C 713)

Mr. CANNON. Mr. President, I yield to the distinguished Senator from Alabama.

Mr. ALLEN. Mr. President, the entire world watched in awe on July 20, 1969, as Neil Armstrong took that historic first step on the moon. We were able to see that "giant leap for mankind," because the men and women who implemented this Nation's space program gave us the technological miracle known as the communications satellite. Ultimately, the space program will benefit each American in a unique and personal way. It will continue to save lives, make life safer and enrich the existence of every citizen of this country.

On December 7, 1971, in a speech on

the floor of the Senate, I discussed at some length a number of practical everyday benefits the American people—and the entire world—can look forward to as a result of technological advances accomplished by our space programs. I quoted from Dr. Wernher von Braun, a citizen of my home State of Alabama and a name recognized worldwide as an authority on space.

Since that time, additional examples have been cited of benefits of the U.S. space program which are already improving medical techniques, diagnostic and treatment systems.

To cite just a few of these:

First. Thanks to the electronic pacer, a boy can live a normal life. This pacer is capable of being implanted in the chest and keeps the heart beating at a normal rate. Miniaturization techniques, perfected in the space program, are an integral part of the pacemaker's design.

Second. Monitoring techniques, similar to the ones used for the Apollo astronauts, are being used in hospitals. The radio-linked automatic patient monitoring system, which can collect several channels of physiological data from as many as 64 hospital patients and transmit the data in digital form to a central control station for processing by a computer, has been developed. The system is now in use at Palm Beach Community Hospital in Florida.

Third. A space helmet utilizing unique sponge electrodes, originally developed by NASA's Ames Research Center to obtain electroencephalographic tracings from astronauts and test pilots under stress, is being adapted to detect hearing defects in children. Investigators at the Scott-White Clinic and Hospital in Texas are perfecting a technique for evaluating hearing ability from EEG tracings.

Fourth. The exploration of space has demanded that scientists come up with life support systems that are self-contained. This technology is finding many nonspace uses. One example is a portable, volume-controlled respirator designed to operate without benefit of external electrical power or external source of oxygen. It weighs 75 percent less than common respirators and it is much more precise; it has particular utility in disaster-area field hospitals.

Fifth. A new medical tool, in use at the School of Nursing and Health Services, St. Louis University, is called a muscle accelerometer. It measures minute muscular tremors that may help doctors in early diagnosis of neurological ailments, including Parkinson's disease. It was developed from a momentum transducer used to measure the impact of micrometeorites on vehicles in space.

Mr. President, the United States sent men to the moon because we are an exploring people, reaching out further and further in order to uncover the mysteries of the world about us. We sent men to the moon because the moon was there to be explored, just as centuries ago man explored the seas, the continents, and in the future will explore the solar system. The people who first dreamed of space exploration were only dimly aware of the many practical benefits which would ultimately flow from their dreams. But, like many ventures into the unknown, the space program has produced useful results far beyond the imagination of the early pioneers who laid the groundwork for this, man's greatest adventure. Surely, the cost—less than 1½ percent of the national budget—is a small price to pay for a program that has returned so much.

In its issue of Friday, April 21, 1972, the Wall Street Journal published an article entitled "Can Man Turn His Back on Space?" written by Edwin McDowell, a staff member of that widely read and highly esteemed newspaper. In addition, there has been prepared a series of assertions made by opponents of the space shuttle program accompanied with detailed responses disproving those assertions. I ask unanimous consent that these articles be printed in the RECORD, together with the text of my speech in the Senate, appearing in the RECORD of June 29, 1971.

There being no objection, the material was ordered to be printed in the RECORD, as follows:

CAN MAN TURN HIS BACK ON SPACE?

(By Edwin McDowell)

In Caruaru, Brazil recently, a father withdrew his eight-year-old son from school because the teacher insisted that man had landed on the moon.

Closer to home, shortly after the first moon walk, and against a backdrop of unprecedened TV coverage and millions of printed words, many Americans continued to express skepticism. Some thought it was a gigantic hoax, others were sure the lunar surface was really the Arizona desert, still others were certain it had all been an elaborate science fiction odyssey.

In short, not everyone believes that America's space accomplishments are real. What is more unsettling, even as Apollo 16 attempts to unravel the mystery of the moon's violent birth some four billion years ago, is that among Americans who believe that man has walked on the moon, there is widespread disagreement as to the value of space exploration.

On the day of liftoff for Apollo 16, Vice President Agnew assured the launch crew that Americans aren't bored with the space program, and he added that "you probably find more people enthusiastic about the space program than you've ever seen before."

But samplings and surveys have made it clear that a great many people are simply not enthusiastic about the space program. In fact, they have serious reservations about rushing to conquer the moon when Planet Earth is still so far from conquering discrimination, pollution, hunger and poverty.

This lack of enthusiasm is reflected in the sharply diminished space budget, in the cancelation of two Apollo moon landings, and in the fact that Apollo 16 is the penultimate moon flight scheduled for this entire decade.

THE CRITICS' CASE

The critics are many and their arguments are impressive. British historian Arnold Toynbee, for example, compared our first moon landing to the building of the pyramids or Louis XIV's palace at Versailles. "Sizing up man's achievements," he commented, "one would say, how amazing, how strange, that this ceature is so marvelous in his technology, but in morals and social behavior he has stayed practically stationary."

Philosopher Lewis Mumford complained: "It is not the outermost reaches of space, but the innermost recesses of the human soul that now demand our most intense exploration and cultivation."

And not long before his death, Bertrand Russell, although applauding the skill and courage of the moon flights, expressed grave reservations about their wisdom. According to him, the bustle and locomotion of space travel would probably do little to promote wisdom, thought or enlightenment. He felt that "men who take to a life of conquest tend to be men who are indifferent to the higher values of civilization."

"I should wish to see a little more wisdom in the conduct of affairs on earth," Lord Russell said, "before we extend our strident and deadly disputes to other parts. . . . It is for us to grow to the stature of the cosmos, not to degrade the cosmos to the level of our futile squabbles."

Each of these arguments has merit. So, too, perhaps, have the arguments that the American space program should place greater reliance on moon rovers, or that space exploration should become more of an international venture than the exclusively American and Russian domain that it has been so far.

Indeed, probably the only argument against space exploration that is patently absurd is the contention that the space program is the special province of the Silent Majority, and therefore is unrelated to the world of the intellectuals and the poor.

In a foreword to an important recent book ("Nine Lies About America," by Arnold Biechman), Tom Wolfe writes of "the phenomenon of the intellectuals' amazing hostility to NASA's success in reaching and exploring the moon."

Social critic Wolfe is particularly interested in Norman Mailer's criticisms of the space program as "tasteless" and of the NASA facilities in Houston as "ordorless." "This seems like a piece of pointless crankiness," writes Mr. Wolfe, "until one realizes that 'ordorless' is a code word for 'sterile.' In fact, his long and involved book on the first moon flight, 'Of a Fire on the Moon,' was nothing more than an announcement that the whole enterprise was sterile." What Mailer and other critics, home and abroad, were really saying, according to Mr. Wolfe, is that these nonintellectual Americans may have accomplished a feat—but the feat was worthless.

But if the arguments against space exploration are impressive, the arguments in favor appear to be even more so. For our periodic thrusts aimed at solving the aged-old mysteries of the cosmos are not just an expensive plaything of the Silent Majority, but a quest whose revelations probably will benefit all mankind.

The economic arguments themselves are impressive, although they can easily be overstated. (Remember the promises about how our tax dollars spent on foreign aid were going to repay us all ten-fold?) Nevertheless, the technological spin-offs from space exploration, some of them already apparent in communications, medicine and food, raise the definite prospect of directly improving mankind's material life on earth.

Furthermore, there is no assurance that the money spent on space exploration, if we were to cut or eliminate our space program, would automatically be diverted to education, housing or other social needs—at least not if the Silent Majority has the political clout and the grudging hostility to broadened social measures that we are repeatedly assured it does have.

Nevertheless, the economic arguments are distinctly secondary considerations, and not only because such promises frequently turn out to be as chimerical as the chain-letter system of piling up a fortune.

Arthur Schlesinger Jr. put it very well when, addressing himself to criticism that space exploration is wasteful, he said he could imagine similar criticism in Spain in the 1490s: "Why in hell are Ferdinand and Isabella giving all that money to that madman Columbus when they could build a good nunnery or a hostel or something?"

But even that analogy is imperfect. For

Columbus discovered America by accident, whereas we know that the moon and Mars and Venus are out there in space waiting to be explored.

A more precise analogy would be if Britain or Portugal, during their glory days of exploration, knew there was a new world beyond the seas but decided it should remain undiscovered and unexplored until they solved their domestic problems. Fortunately for both countries, Elizabeth I and Prince Henry the Navigator had other ideas.

SCIENTIFIC REWARDS

This is not to suggest that the U.S. should ignore the costs of space exploration, and race frantically from one planet to another while America's own cities fester and die. Perhaps the temporary moratorium the administration has placed on space flights is advisable, even though each new moon mission is far more productive and scientifically rewarding than each of its predecessors. But abandonment of America's space venture, which some critics have been urging, would be disastrous.

Historian and philosopher Salvador de Madariaga has properly noted, "It is from men who act on nature, and do not merely suffer to be acted upon by her, that history flows." And Arthur Clarke, the noted space writer, observed: "A nation which concentrates on the present will have no future; in statesmanship, as in everyday life, wisdom lies in the right division of resources between today's demands and tomorrow's needs."

Moon exploration is only the beginning of the long stride across the ages of man. It is only one more waystation along man's eternal journey toward the new and unknown. It is a transcendent event, one that imperfect modern man should no more turn his back on than men of antiquity should have turned their backs on other villages or other lands.

It is an awesome, Promethean challenge, one that only a frightened, confused nation—a nation of people who have lost their way—would reject as an unworthy goal.

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SPACE SHUTTLE PROGRAM

Assertion. The space shuttle has more to do with perpetuation of bureaucratic interests and the politics of Government contracting than with the authentic needs of the Nation.

Answer. Wrong on two counts:

*First*—The space shuttle and the whole space program have strong bipartisan support. For example:

In the 64 to 22 vote approving the Shuttle in the Senate last June, 27 Democrats joined 37 Republicans in support of the Shuttle.

During House debate on the FY 73 NASA Authorization bill on April 20 of this year, 6 Democrats and 7 Republicans spoke in opposition to the Aspin Amendment (to delete funding for the space shuttle and to instead authorize further studies of it). The Aspin Amendment was rejected by an almost 10 to 1 margin.

Senator Humphrey came out strongly in support of the Shuttle several weeks ago.

On Feb. 18, 1972, in Miami, Fla., the Executive Committee of the AFL–CIO passed a resolution supporting the Space Shuttle Program.

*Second*—The space shuttle is an authentic need of the Nation. It is the right thing for the Nation to do.

We *cannot afford* to abandon space to other technological superpowers—only if we maintain U.S. presence can we assure ourselves that space activities will continue to be focused only toward benefits for mankind and that the U.S. will participate in those benefits.

The Shuttle *is a good investment.* A detailed economic analysis by Dr. Oskar Morgenstern of Mathematica Inc., a world renowned economist, has demonstrated this beyond any doubt. With the Shuttle we will be able to expand the returns of the space program without increasing the space budget.

We *cannot afford* to have a space program in the 80's that relies on the expensive technologies of the 60's—when we know we can do more, do it better, and do it cheaper.

We *can afford* to produce the Shuttle and reap its direct and indirect benefits within a modest space budget, one well below the four, five and six billion dollar per year peaks that characterized the mid-sixties.

Assertions. The Shuttle is too expensive, it is squandering funds that could better be spent elsewhere, and it is not cost-effective.

Answer. The same points were raised last year with respect to an alleged $20 to $30 billion program; however, we are talking about a $5.15 billion program extending over six years. That's an average of less than $5 apiece each year—not too expensive for America, not too expensive to make our space program one of the best investments man has ever had the foresight to propose.

Today each of us is already spending 43¢ of every tax dollar on social action programs (welfare, health, education, community development, housing, etc.) and we only spend 1½¢ of every tax dollar on space research and technology. To contend that putting the 1½¢ on top of 43¢ would solve our social problems is unrealistic—and think of the loss to the nation if we had no space program.

The expansion of America's technology, as in pursuit of a broadly beneficial space program, provides an important stimulus to many sectors of our society. Our future in world commerce depends strongly on our ability to maintain our preeminence in technology-based exports. Progress in space offers the global view essential to the solution of many of our current, mutual problems.

Stringent economic analyses have shown that we can reduce space costs by increasing the reuse of launch vehicles and payloads. The Shuttle does exactly that; it puts space flight in the same category as aviation. We don't throw away a DC–10 after one transcontinental flight; we do our present boosters. We don't install complex systems without the ability to maintain them; we do our present spacecraft.

The 1969 RAND study was wrong; the Secretary of the Air Force has rejected its conclusions since they were based on erroneous assumptions. The cost-effectiveness of the Shuttle is not tied to the cost of the payloads it carries but rather to the reduction in costs of launch, to the maintenance, repair and reuse factors for both vehicle and payload, and to the routine accessibility of space.

Assertion. Scientists don't support the Shuttle.

Answer. Some scientists may not; Thomas Edison also said that commercial aviation would never develop, yet people today travel the world over by jet airplane. Some scientists also felt lunar exploration was not going to be valuable; these same scientists are now pleading for continuing Apollo missions. Hindsight is easier than foresight. Many scientists do support the shuttle:

What the scientists want are space science missions—preferably ours with which they can be personally involved. The Shuttle will make more, not less, such opportunities available. There will be more missions for science, for applications, for exploration when we can get to space easily and routinely.

Without a Shuttle, individual space missions will continue to be slow to mature and costly to deploy; the rate of progress and of discovery will be held back by high cost and high risk.

The Shuttle will be to space science what the computer has been to mathematics—an easier way to do better and infinitely faster what used to be onerous, slow, and expensive.

Assertion. We can do the same space program without the Shuttle and for less cost.

Answer. This is absurd. It is like saying we can travel as far as easily on foot as we can by car or plane. There is no expert evidence that science and applications programs will not benefit from the Shuttle—unless we choose a program so limited in scope that its values would be trivial.

The real goals of space are to use its unique characteristics for human good—communications, monitoring and managing our environment, discovering the laws that govern the solar system and the universe.

The Shuttle's purpose is to make these goals technically feasible and financially attractive.

There is no other realistic long-range space program that can even approach the benefits that the Shuttle provides.

Assertion. The Shuttle is an example of perverse priorities, a boondoggle, a colossal waste, a perpetuation of bureaucratic interests; it is not related to the authentic needs of the nation.

Answer. There is no substance behind such language. The real issue is simply this: Should this country abandon the use of space to others; should we deny our citizens the benefits of space science, space technology, and operational space systems.

The authentic needs of America go far beyond welfare programs; the responsibilities of America have always been to both the present and the future. And, two years ago, a majority of the Senate three times agreed that the space shuttle and the programs it would make possible were an important part of that future. Last year, in another test of this principle, the future won again, 64–22.

Some other points:

Much of our national security is involved with space—and the Shuttle's flexibility will add enormously to our capabilities while at the same time reducing their costs. The space shuttle has strong DOD support.

Much of our future will be engaged in learning to live intelligently within the limited confines of "spaceship Earth"—and it will be Shuttle payloads that will give us the information we must have to make wise use of our land, air and water resources.

Many of our problems today, such as pollution, energy, hunger, natural disasters, delivery of medical care, and exchange of information, can be directly attacked through proper applications of space technology, science and systems—and a Shuttle is an integral part of the programs that are being developed to meet such needs.

Much of our strength today, much of our freedom, has stemmed from the courage to invest in the future even when the payoff was uncertain or unknowable. Here is an investment whose known returns are clear and certain, and whose potential is probably beyond the reach of even our most imaginative prophets.

Assertion. The Shuttle will be environmentally dangerous, like the SST, because of sonic boom.

Answer. The Shuttle is being designed by engineers who are quite aware of the sonic boom phenomenon and managed by administrators who are quite alert to the needs for environmental protection. The Shuttle and its mission profiles are being designed specifically to avoid detrimental sonic booms over land.

The concern about the effects of SST sonic boom was based on the assumption that they would fly supersonically over populated areas, that there would be frequent flights, and that the shock wave would travel along the ground beneath the aircraft on a continuing basis during most of each flight. These conditions do not apply to the space shuttle. The "flight" phase of its mission is at orbital altitude in a near vacuum where sonic booms as such can not be produced.

Only during the launch phase is a serious sonic boom produced, and then for a short duration. The launch trajectory will route the Shuttle over ocean.

Assertion. The Shuttle is only another example of a technological fixation on vast manned spaceflight projects for their own sake.

Answer. This statement evidences a fundamental misunderstanding of the Shuttle concept. With the Shuttle, we are specifically moving *away* from manned space missions as we have known them. Valuable as it has been to science and technology, the era of Mercury, Gemini and Apollo missions is in the past. We are talking about a *piloted launch vehicle* to serve in space the functions that the automobile, the ship and the airplane serve on earth. The missions that the Shuttle permits us to carry out in earth orbit will be automated, manned-tended, or wholly manned, depending entirely upon their character and need. For example, most routine space operations are expected to involve automated systems that are maintained and replaced by the Shuttle. However, biological experimentation, for example, is rather difficult to imagine being carried out without the experimenter being present. Similarly, large astronomical telescopes and other complex scientific devices can benefit enormously from regular maintenance and adjustment by a visiting technician. The Shuttle, therefore, is not a vast manned flight project but a tool to open space and its benefits to man on earth.

Assertion. The Shuttle is just a first step toward a manned trip to Mars.

Answer. No it is not.

The Shuttle is planned as an efficient system for the transport of men and equipment into and out of earth orbit. The Shuttle is not a first step toward any new program but instead, it is to support and make more effective the type of missions which we have underway today and those new missions which this country decides to undertake in the future.

The requirements developed for the Shuttle have not depended upon, and have not included consideration of, manned planetary missions or even post-Apollo manned lunar missions, were the country to undertake such a program.

The entire Shuttle philosophy has been based on requirements for manned and unmanned missions in earth orbit and on the support of a program of *unmanned* planetary probes.

Assertion. NASA estimates that the Shuttle program will cost $5.15 billion (spread over six years), but estimates are always low.

Answer. When the goals of the Apollo program were first enunciated, before detailed designs had been even started, before all of the developmental difficulties had been assessed, NASA said that it would cost between $20 and $40 billion to land men on the moon and bring them safely back. By the time the Apollo 17 mission is completed and the Apollo flight program has come to an end, NASA will have spent about $23 billion on this most successful enterprise. As far as meeting the initial objective of safe manned lunar landing and return NASA accomplished that for some $19 billion, or even less than their initial, least conservative, estimate.

NASA has learned over the past ten years to estimate even more closely; $5.15 billion is a firm estimate based on experience and supported by detailed and sophisticated analyses. There is a good probability that they can bring the Shuttle into being for a price less than their estimate.

Assertion. NASA should not now embark on a plan that occupies most of its strength for another round of long-range development work, but should instead concentrate on the useful applications and scientific projects which the previous round of developmental work has made possible.

Answer. Past NASA programs have laid a foundation for a vast array of useful future advances in space sciences and space applications. However, these programs such as communications, environmental monitoring and resources surveys are the very ones which the Shuttle is designed to exploit. By lowering launch costs, making possible more accurate satellite placement, and providing for satellite repair, the Shuttle will enhance the value of such programs.

Assertion. NASA has a history of being interested in bringing new technology into existence, but then not following through on the applications and benefits this could provide.

Answer. This is based in part on a misconception of the mission of the National Aeronautics and Space Administration. It is not NASA's mission to provide direct operational services. Rather, it is NASA's mission to develop space technology and applications to the point of practical benefits and then turn over the benefits and results of such efforts to operational organizations such as the Department of Commerce's National Oceanic and Atmospheric Administration or the Communications Satellite Corporation. TIROS weather satellites and synchronous communications satellites are examples of such conversions.

Assertion. NASA has always disappointed scientists by discontinuing space systems at the point when they have achieved the perfection needed to do the job for which they were devised. The same will happen following the development of the space shuttle.

Answer. Quite the contrary. With the Shuttle scientists will finally be able to work in a mode which more closely resembles the way they work in the laboratory. For example with the Shuttle it will be possible to make short-term "sortie" missions to checkout new prototype experiments or conduct experiments which can be accomplished in a relatively short time thus reducing the time between conception and completion of an experiment. Indeed, the Shuttle will make it possible for scientists to accompany their experiments into space and perform scientific operations firsthand. As passengers aboard the Shuttle, scientists will not require any training or expertise in space flight but can be transported much the same as passengers aboard a commercial airliner to their destination in orbit.

Assertion. We cannot afford to wait for the development of the Shuttle before starting a vigorous space science program.

Answer. NASA is not standing idly by waiting for the development of the Shuttle. During the development of the Shuttle, NASA will continue its current program of automated scientific spacecraft for the next several years. At the same time, design studies on specific projects such as the Orbiting Solar Observatory (OSO), the High Energy Astronomy Observatory (HEAO), and the Large Space Telescope (LST), are in progress to assure that these projects will benefit as much as possible from an operational Shuttle.

Assertion. It is not possible at this time to predict the technological hurdles which the Shuttle development must overcome and, therefore, present economic estimates of Shuttle costs are not sound.

Answer. Over two years of focused space shuttle technology studies, experimental testing and evaluation have verified that the current state of technology will support development of the shuttle under the present schedule. While technical studies are continuing in many areas such as aerodynamic effects, avionics, and high temperature materials, and while further innovation is still desirable to reduce development and operational costs even more, the fundamental technology required now exists and no breakthroughs are necessary.

Assertion. Continued mass production of existing launch vehicles of a few standard types of expendable boosters could lead to great economies and thus negate the need for the reusable Shuttle.

Answer. This question has been investigated by Aerospace Corporation, a company which has had extensive experience with both the payload and economic effects of continued expendable launch vehicle production. In this study, production rate effects were fully considered and the study concluded that the Shuttle showed substantial economic advantages.

Assertion, Shuttle economies become less favorable for smaller annual payload requirements, and in view of improvements in electronic technology, average weight requirements will continue to diminish drastically thus reducing the need for the Shuttle's capabilities.

Answer. With respect to payloads, detailed engineering studies have shown that economies and other advantages are possible through relaxation of the size and weight constraints imposed by current launch vehicles. With the space shuttle, the configuration of satellites can be established by considerations of component access, ease of fabrication, and simplicity of testing rather than by the need to crowd miniaturized equipment into the nose cone of an expendable launch system.

Thus the Shuttle should markedly decrease the payload cost and at the same time add a degree of flexibility in construction and testing not presently possible.

Assertion. Development of the Shuttle will result in a very small space transportation fleet thus rendering the whole space program vulnerable to long delays in the event of accident, sabotage or hostile attack. This would also impair the reliability which the military could place on the system.

Answer. All systems, military or otherwise, are subject to accident or other abuse. NASA's quality assurance and safety programs will be given top priority in the Shuttle development program. When operational, it is expected that the DOD will have their own shuttles and will be in a postion to protect them.

Assertion. Development of the Shuttle will severely inhibit advances in alternate modes of space propulsion.

Answer. Basic research sponsored by NASA will continue to study alternate power and propulsion techniques. The Shuttle has been concluded to be, however, the most cost effective launch system for the next generation, as liquid rockets were for the preceding period.

Assertion. A balanced presentation to competent evaluators with no ties to NASA or its contractors of the potential costs and benefits of the shuttle is necessary to obtain an unbiased review of the program.

Answer. Agreed; this has already been done. The space shuttle program as now presented was given a most critical independent review by the Office of Management and Budget and other elements of the Executive Office The principal study in depth of the economics of the space shuttle program was by Mathematica, Inc. This study was commissioned by NASA as an independent study and appraisal of the economic worth of the space shuttle concept. Dr. Morgenstern of Mathematica has testified directly to the Senate Space Committee that his company was given full independence and freedom to criticize in the conduct of this study. He also stated he felt at the outset of the study that the shuttle would not prove cost-effective under rigorous analysis; he was surprised that it did. The study reports stand on their own feet as classic examples of penetrating, detailed analysis of a very complex program.

Assertion. The space shuttle is merely a "make-work" program to provide employment in the aerospace industry.

Answer. While the Shuttle program is, of course, sustained on its technical and scientific merits, it is also important to note that the economic impact of proceeding with the

Shuttle from an employment standpoint would be signicant. Over 200,000 industrial man-years of work over eight years will be required, an average of over 25,000 jobs each year. This does not even include indirect local employment, which could be several times that number. Also the NASA-contractor organization, responsible for the overwhelming successes in the Apollo program, represents a major national asset of scientific, technical and managerial skills. The fact that the space shuttle will retain much of this capability is an important consequence of the decision to proceed with its development.

Assertion. NASA has continuously changed the proposed configuration of the shuttle and until a final configuration is selected it would be foolish to authorize additional funds for development.

Answer. The present Shuttle program has evolved in the free and open, critical, "give-and-take" type of discussion that characterizes innovative technical studies involving literally thousands of engineers and other professional specialists. In guiding and reviewing these studies, NASA has not suppressed or ignored dissenting views. Such views have been considered at the appropriate stages in the decision process and have helped shape the program in its present form. The changes in the program during the past two years, in fact, represent NASA's response to independent views it has sought and encouraged both within NASA and from outside groups. The present Shuttle configuration represents the ultimate result of these exchanges and is consequently the most cost-effective and technically sound approach.

Assertion. Approval of the space shuttle program represents a built-in commitment to higher space budgets in future years.

Answer. Not true.

All of the costs of the space shuttle program, plus all of the development and operating costs of a balanced total space program using the space shuttle, can be contained within a total space budget (NASA, DOD, and other users) which does not exceed the current total annual level.

Assertion. A lower payload Shuttle would cost less.

Answer. NASA and industry have made exhaustive studies of the effects of lowering the payload capability of the space shuttle. The results established that savings in development cost were only on the order of 10% and that the reduction in payload capability would result in a substantial net increase in the cost of the overall space program through 1990.

Assertion. There are no NASA missions which require a 65,000 pound orbital payload.

Answer. Not true. The decision on sizing the Shuttle capability reflects consideration of (1) the maximum single mission weight requirements that can reasonably be expected in the 1980's and beyond, and (2) the Shuttle performance required to place lighter payloads in higher altitude and higher inclination orbits.

A 5,000-pound communications, meteorological, or military satellite to be placed in synchronous orbit with the reusable space tug when it becomes available in the 1980's will require the full capacity of the Shuttle.

A Shuttle capability equivalent to 65,000 pounds launched due east in a 100 nautical mile orbit will be required for a number of other missions. Examples are earth resources types of satellites expected to be in use in the early 1980's. These satellites are expected to weigh about 6,000 pounds, but because of the high inclination and high altitude of the orbits required, and the weight of the propulsion stage required to reach these orbits, the Shuttle capabilities required correspond approximately to the 65,000 pound, 100 nautical mile due east capability that has been specified for the space shuttle.

Assertion. There is no way to justify the claim that the Shuttle will reduce the cost-per-pound in orbit.

Answer. Cost-per-pound in orbit when fully loaded is simply an index of the efficiency of a launch vehicle. This amount is computed by dividing the average cost-per-launch into the total weight the launch vehicle can place in a standard reference 100 nautical mile due east orbit. This index is one of many indicators which show the relative efficiency of the space shuttle compared to current expendable launch vehicles. The index of $160 per pound for the space shuttle compares to an estimate of $900 per pound for the Titan III C, the most efficient current launch vehicle by this standard.

The Shuttle does not have to be fully loaded to achieve economies, any more than a 230 horsepower car has to be operated at full power to be efficient, or a 150-passenger airplane has to be fully loaded to show a profit. With the loadings required to carry out the specific mission models studied, it was found that savings averaging $1 billion per year would result from use of the Shuttle.

Assertion. The quality of the Mathematica study has not been appraised.

Answer. The Mathematica, Inc. study has been subjected to review by NASA management and within the Office of Management and Budget, and has been presented by Dr. Oskar Morgenstern of Mathematica to a number of other professional economists, to several universities and corporations, and to the Senate Committee on Aeronautical and Space Sciences. There have been no adverse criticisms of either the methodology or the findings by any professionally competent group or individual. The constraints placed by Dr. Morgenstern and his people on the scope of the study, whereby they excluded the benefits of any missions which would be beyond today's state-of-the-art, or which could not be carried out using expendable vehicles, represents an extremely conservative approach and has resulted in an understatement of the real advantages that will result from the introduction of the space shuttle.

The study concludes that the space shuttle can be justified on economic grounds for a wide range of possible mission models. Most importantly, the study proves that the Shuttle is economically sound even if used *only* for automated science and applications missions. Mathematica studied in detail a range of discrete mission models calling for from 681 to 403 shuttle flights over a 12-year period (1979-1990). When these results were extended to even lower numbers of flights, Mathematica found that even with a 10% discount rate the break-even point occurred at 360 flights over the 12-year period. Thus the shuttle would represent a good investment even if the total number of flights did not exceed an average of 30 per year, or even less if a period longer than 12 years had been assumed for the useful life of the Shuttle. (It should be noted that both Atlas and Thor boosters have already been in use for over 13 years.) The Mathematica conclusions do not depend on the weight of the payloads associated with the program.

Assertion. The Shuttle, while supposedly a civilian program, will be taken over by military interests.

Answer. Not true. The Secretary of the Air Force has testified that he anticipated a requirement of about 20 flights a year for the military. Obviously, the space shuttle is a general purpose system which can transport military traffic as effectively as non-military traffic. This does not lead to the conclusion, however, that military projects will override or take control of this country's civilian space program. Both NASA and DOD today use the same expendable boosters, each buying what they require. The same will hold true for the Shutttle. Skeptics who argue that the shuttle is a military undertaking and should be funded through the Department of Defense, ignore the fact that the Shuttle is a *space transportation* system. To argue that DOD should fund and develop the shuttle is analogous to saying that because military mail is delivered by the Postal Service, the Department of Defense should take over the mail system.

Assertion. Further economic studies should be made before additional funding is approved for the Shuttle.

Answer. To defer the Shuttle for a year for further study is programmatic and economic nonsense:

All aspects of the Shuttle have been under detailed study for over two years already by the best qualified professional organizations available.

The facts we need for the Shuttle decisions have been developed and made available to anyone interested; there literally is no more that could reasonably be done to validate the technical and economic case for the space shuttle.

The cost and benefit estimates are sound:

They are based on exhaustive technical and design studies by the best engineering firms in the country.

The cost estimates are those of the Government, not the contractors. The 5.15 billion dollar estimate already includes factors for contingencies and changes based on past experience. NASA has demonstrated its ability to carry out major developments within pre-established cost limits.

The economic benefits analyses were carried out by highly respected, independent professionals, including Mathematica, Inc. and Aerospace Corporation. The methodology and the results have been critically examined and accepted by the academic and engineering community. When the author of the Mathematica study was asked by the Senate Aeronautical and Space Science Committee whether further studies were needed, he said: "If I were in a position to give a go-ahead sign, I would give it. That is my answer."

The Mathematica study concludes that the Shuttle is cost effective over a wide range of traffic mixes between NASA, DOD, commercial and government agency users.

The Mathematica study is based on an estimated direct cost of $3.5 billion per year for the *total* national United States space program for each of the 12 years covered by the study. This very conservative estimate includes the costs of NASA, non-NASA government agencies, commercial users, and DOD, and is lower than current program levels.

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[From the CONGRESSIONAL RECORD, June 29, 1971]

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION AUTHORIZATION ACT, 1972

Mr. ALLEN. Mr. President, I thank the distinguished Senator from West Virginia for yielding his time to me.

Mr. President, I rise in opposition to amendment No. 233 by the Senator from Minnesota (Mr. MONDALE) which would eliminate the provision for the space shuttle from the NASA authorization.

Mr. President, on April 19 the Soviet Union launched an unmanned "orbital scientific station" called Salute, into earth orbit. Three weeks ago a three-man team of Russian spacemen docked with Salute and have remained in space, conducting a wide variety of experiments, most of which remain deep secrets of the Soviets. We are told, however, that one of the experiments involves the successful growing of plants under artificial conditions and that the spacemen, who have already set a record for living under the conditions of weightlessness are putting on weight themselves.

We are told nothing of the other experi-

ments being conducted, and we are left to wonder and to worry about how many military projects are being performed in that manned space station.

Mr. President, the key words to the new Russian effort are "manned space station."

How many times have we heard the arguments—and are still hearing the arguments—that the manned space program being carried out by the United States is unnecessary. And those who make this type of argument have pointed to the Soviet Union's moon shots as examples of unmanned flight. But how do those who attempt to detract from our manned space program now explain away the Russian manned space station that even now is traveling in space over our head—human minds and human hands directing its movements from aboard the spacecraft, not from some ground station? The point is that the Soviet Union, like the United States, is developing manned as well as unmanned space programs.

The United States, through the National Aeronautics and Space Administration, has gone through the initial period of exploration and discovery in space and we are on the brink of great returns.

One of our top priority programs for the 1970's is the space shuttle program as proposed and now under study by NASA.

The space shuttle is not a manned spacecraft; it is a reusable space transportation system to deliver manned and unmanned payloads to low earth orbit. It will consist of a booster and an orbiter, both of which can be reused up to 100 times.

Program planners have known for some time that the use of this vehicle 100 times or more will lead to substantial reductions in the cost of space transportation. The cost of placing a pound in orbit and returning it back to earth will be reduced by more than a factor of 10—from $1,000 a pound for the present one-way trip to about $100 a pound to orbit and back to earth.

New economic studies have determined that even greater savings will result in the cost of producing and testing the spacecraft themselves, which will be the shuttle's cargo.

The greatest savings will be in unmanned satellites, which now cost generally between $12,000 and $20,000 a pound. Some are even more expensive. The high present costs result from the need for extensive miniaturization and testing. The machinery within a satellite is much more delicate than that in a fine watch. It must be tested and retested to be sure that nothing will fail to operate properly after it is in orbit.

With the reusable space shuttle, both of these problems will be solved. The shuttle will have as much space and weight-carrying capacity as a large cargo airplane. Thus it will be able to carry less expensive equipment, like that used on earth. Standard, low-cost parts and components will be in general use.

The shuttle will be able to bring satellites back to earth as easily as it puts them into orbit. Thus the costs will be reduced by planning on the reuse of satellites and space flight equipment. Should anything malfunction in space, it will be returned to earth for adjustment, repair, refurbishment, or replacement. And in many cases, scientists or technicians will be able to go into space by way of the shuttle to adjust and operate the instruments, just as they now do in aircraft.

The space shuttle will be the only capability for manned space flight after 1973, when the earth-orbital Skylab experimental space station program will be completed. Without a shuttle, there will be no more U.S. manned space flights after 1973. Even with a shuttle, there will be a gap in manned space flights from 1974 through at least 1977.

Termination of U.S. manned space flight activities by a conscious decision or by failure to provide adequate support to continue a balanced total program would mean—besides the loss of the benefits to science, technology, exploration, and practical applications—that for the indefinite future the Soviets would have manned operations in space as their exclusive domain. The operation of Salute should erase any doubts that the U.S.S.R. is pursuing manned space flight as a continuing major objective to which they are applying very substantial resources.

I am growing increasingly concerned about our Nation's long-term position in space relative to the Soviet Union. I can only hope that we are able to profit from the lessons of history. Surely, this country cannot so soon have forgotten the tremendous shock we faced in 1957 when the first sputnik went beeping around the world to give us warning that another country was challenging our position of technological leadership. It took us many years of hard work and unflagging effort and much of our treasure to regain that position of leadership, and today we see it again being strongly challenged.

If we lose our position of leadership again, we may not have the capacity to catch up. For a period at least 4 years after our Skylab program is completed, there will be no Americans in space. During that rather long period of time, we can be quite sure that the Russians will continue to make major advances in manned space flight, and specifically, space station technology.

That is why I think it is of the utmost importance that we of the legislative branch give our strong support to the U.S. space program of the next decade. Even more than that, I feel we must urge that all steps possible be taken to strengthen it, to keep us from falling too far behind.

NASA studies of shuttle benefits are quite conservative. For example, they do not assume the great expansion of space flight applications that can be predicted from these sharply reduced costs. They do not anticipate the growth envisioned by many scientists in communications, weather and earth observation satellites, or scientific studies of the earth and its environment. Nor do they presume any expansion to meet the needs of other agencies of the U.S. Government, commercial interests or foreign agencies.

Mr. President, I have been a foremost advocate of leveling off our space activities from the crash program of the past to a more stable program accommodating the national budget and national priorities.

The NASA appropriations contained in the Independent Offices-HUD authorization bill will give us this stability and will enable us to build our future space program on the solid foundations of past discovery and technological achievement.

The space shuttle capabilities form a required part of the total U.S. space program for the 1970's; it is important that we develop these new capabilities soon; and the program NASA is presenting for fiscal year 1972 is calculated to proceed with this development in an orderly step-by-step fashion.

I believe that it is in the best interests of our country that the NASA appropriations be approved without further reduction.

Mr. President, we live in a much too fast-moving era when accomplishments of yesterday are almost overwhelmed in the problems of today and almost lost in the promises of tomorrow. I do not think that it is necessary for me to take time here to recount the achievements made by our civilian space agency during the past 20 years—achievements which all of us should recount with pride. From the successful launching of Explorer I to manned exploration of the moon, the tremendous economic and social growth of the United States has paralleled the accomplishments of our space pioneers.

Neither is it necessary for me to devote time now in ennumerating the gains to our way of life because of our space program. These reach all the way from instant video and audio communications from any point on this earth because of our satellites, to teflon-coated cooking utensils in our homes, resources exploration and pollution detection of our planet and charting the course of dangerous weather conditions throughout the world.

Nonetheless, because of the fast pace we run, I fear that many of us forget the achievements of our space program and we tend to overlook the gains to our way of life because of our space program. In its August 29, 1970, issue, the estimable Christian Science Monitor published an article entitled "Aerospace 'Fallout'—Something for Everyone" written by Eric Burgess, who is a staff writer for the paper. I commend this article to the attention of every Member of this body and I ask unanimous consent that it be printed in the RECORD.

There being no objection, the article was ordered to be printed in the RECORD, as follows:

AEROSPACE "FALLOUT"—SOMETHING FOR EVERYONE

(By Eric Burgess)

Jane Evans heard her husband's voice clearly in the telephone. He had just arrived from across country on a large jet and was about to pick up his automobile at the airport. He said he expected to be home within an hour even though the freeways were slick with rain.

Jane didn't stop to think that her husband's fast trip from the East Coast was a boon of aerospace technology. Even his telephone call had been automatically routed by advanced electronics first evolved to control missiles.

And his drive over the rain-slick freeway was made safe by grooves cut into the pavement to stop skidding—an innovation from aerospace work to improve runways.

As Jane prepared the evening meal for her family she removed a thin plastic that wrapped the meat. It originated from plastic developed for an Echo satellite. The electricity heating her stove was supplied through power-control techniques developed from aerospace research. Nor did she connect the beat music from her teen-age daughter's record player as an indirect product of the aerospace age.

But aerospace is all around—intimately woven into the technological pattern of American civilization. The impact on the United States standard of living is proverbial.

BENEFITS—DIRECT AND INDIRECT

Specific and direct aerospace benefits include commercial jets, computers, and communications and weather satellites. Indirect ones include new materials, manufacturing techniques, management systems, and a broadened outlook.

Benefits are not solely new gadgets—Teflon-coated kitchen utensils, transistor radios, color TV, micro-computers, flameproof materials—even though these are important spin-offs from aerospace programs. Many experts say the real payoff from aerospace is the broadening of thought—a cognizance by the many of things before known only to a select few.

They say aerospace has helped trigger a new renaissance, a revolution of rising expectations. For the first time in history great numbers of people realize that mankind has tools, resources, energy sources, and knowledge to achieve what earlier seemed impossible.

Earlier technology was applied mainly for better military posture or to amass great wealth for a few. But in the past decade technology expanded man's physical and mental realms tremendously.

Aerospace showed how to discover and invent on schedule for nonmilitary as well as military purposes. In the words of Dr. Kraft A. Ehricke, a rocket expert from Peenemünde

and now chief scientific adviser at the Space Division of North America Rockwell: "Our space effort is the first nonwar-oriented technoscientific endeavor large enough to require a national commitment.

"It set a precedent—encouraged the conception of many other large-scale efforts, such as the 'war on poverty,' the concept of a national oceans program, and the organization of a national fight against pollution—all of which, ironically, attack or criticize their seedbed, the national space program."

Nor is it by chance, says Dr. Fred Hoyle, world-famous British astronomer, that quite suddenly everyone worldwide has become seriously interested in protecting the environment. "Something new has happened to create this feeling of awareness about our planet," says Dr. Hoyle, who many years ago predicted that, once men saw the earth from space, "a new idea, as powerful as any in history, will be let loose."

This new awareness parallels the experience of Europeans as they expanded to explore and then develop other continents. Europe blossomed in art, science, social, and religious reform. Now earth as a whole is blossoming in a new awakening and a new reformation that also has many material benefits.

THRONGS IN LINDBERGH'S WAKE

Dr. Wernher von Braun, when he directed the Marshall Space Flight Center, Huntsville, Ala., once said: "The real payoff [from spaceflight] does not lie in mining the moon . . . but in enriching our economy and our science in new methods, new procedures, new knowledge, and advancing technology in general."

Only 40 years after Charles Lindbergh made his hazardous flight across the Atlantic Ocean, more than 20,000 people cross that ocean by air each day. Aerospace technology breaks down worldwide mental barriers and helps cement international goodwill—it brings the man in the street together with others on an unprecedented scale. Earlier ocean travel was too expensive in time and money.

Aerospace, as America's largest manufacturing industry, employs 1.3 million people with a $14 billion annual payroll. It is one of the great producers of national wealth, exporting (in 1969) $2.9 billion in aircraft and parts. This furthers American purchases of goods and products worldwide.

And there are direct benefits from aerospace technology. One is the communication satellite, which was made possible by application of large rocket boosters, miniaturized electronics, and solar cells that convert sunlight into electrical power.

REVOLUTION IN WORLD COMMUNICATIONS

Thus, a relatively small, self-contained, unmanned satellite now does the work of many thousands of tons of ocean cables. Such satellites brought a revolution in global communications, helping underdeveloped countries as well as industrial nations.

In 1969 live TV could not be sent across major oceans. Now it is commonplace via satellite. And before satellite it cost $15,000 a month to rent a cable circuit across the Pacific. Via satellite it is only $4,000.

And communication satellites can assist education and link computers. They may one day transmit messages instead of mail and extend their communications links into every home, replacing telephone lines for rapid communications with information stores throughout the world.

Meteorology became a science only through applications of aerospace technology. Meteorological satellites allow weather systems to be mapped and tracked on a global scale for the first time.

If Jane Evans lived in some parts of this country she would receive warnings of hurricanes because of satellites. Since 1966 these satellites have kept close watch on every major storm threatening this nation and have alerted against potential major disasters.

In response to requirements of space and planetary exploration the technologies associated with automatic computation and advanced technical analysis took on a new and vigorous growth. Computer-analysis techniques of tremendous power were developed.

And even the computer itself was developed to meet the needs of aerospace. Now virtually every aspect of human endeavor is enhanced by the commercial application of the digital computer. To cite only a few: airline and travel reservations, accounting, law enforcement, stock market transactions, industrial process control, engineering design, banking, and typesetting.

And the aerospace industry developed computer simulation techniques by which complex human situations can be mathematically modeled and tried out in advance. These simulation techniques brought back the Apollo 13 astronauts from near-disaster. They are being used to find solutions for pollution and traffic problems and to aid business management and planning.

Almost every major computer system in the world is made in America. Without the space effort of 5 to 10 years back these computers would not be available today. And now the computing industry is an $8 billion-a-year business that pays the highest wages of all U.S. industry. It is the fastest-growing industry and contributes most to the American balance of trade. U.S. computer exports increased 1,400 percent in the first decade of the space age.

AUTO-POLLUTION MINIMIZERS SEEN

Lt. Gen. Sam Phillips, commander of the Air Force Space and Missile Systems Organization, recently told a management group meeting in Chicago: "Of some 12,000 new products and techniques which have come into being in the last decade, a very large percentage are directly attributable to space and missile development."

W. H. Berger, president of North American Rockwell's space division, says he visualizes many applications of aerospace technology. For example, micro-miniaturized computers in automobiles might control fuel injection and timing to minimize exhaust pollution.

Large aerospace programs have revolutionized management techniques. They motivate and bring together many highly intelligent and energic people of diverse technical skills, keep track of myriads of parallel processes, identify problems quickly, and continually adapt to changes needed as experience produces more knowledge.

These management techniques are capable of solving the socioeconomic problems facing the world today, say aerospace managers.

Aerospace has also made significant contributions to manufacturing technology which are only just beginning to be felt in commerce and industry. Industry now welds complex shapes and exotic new materials and manufactures items in previously impossible configurations.

Computer-controlled machining, metal-forming by hydroexplosives, chemical milling, electric-arc sculpturing, and solid-state diffusion bonding are new processes derived from aerospace.

Some manufacturing engineers say that within a few years solid-state diffusion bonding will be applied widely in chemical, petrochemical, nuclear, refining, and air-conditioning industries because it results in metal parts that have joints as strong and leakproof as the materials that are bonded together.

And filament-wound glass structures came from aerospace. Suggested as building materials for homes of the future, they are used now to fabricate large-diameter pipes—an outcome of making cases for solid-propellant rockets.

"The marriage of numerical control, the digital computer, and machine tools is one of the stunning technological innovations of our time," said Willard F. Rockwell Jr., chairman of North American Rockwell, in a keynote address to the Western Metal and Tool Exposition and Conference here.

And this all began back in 1952, he explains, because the Air Force wanted a better way to machine helicopter blades.

Now numerical control of machine tools has spread from aerospace to increase productivity four or five times.

No longer need a product be locked inexorably into an inflexible assembly line. Products can be changed to meet changing markets but still be mass produced.

APPLICATION IN WATER TRANSPORT

Automated fabrication is seen by many as the next step of aerospace applications to the nonaerospace economy. Factories will automatically manufacture commercial products through computer-aided design now commonplace in aerospace.

System engineering techniques developed for aerospace were used in the multibillion-dollar California water project designed to move more than 2 million acre-feet of water every year from northern to southern California, including the crossing of a 4,000-foot-high mountain range.

Aerospace lasers align tunnelmaking machines with unheard-of precision.

And systems-approach methods are being used to define power scheduling of the Columbia River hydroelectric system for the Bonneville Power Authority to achieve substantial savings in water consumption.

Aerospace has produced a galaxy of new materials—tough steels that are not brittle, lightweight alloys, honeycomb panels, plastics, lubricants, special coatings, fireproof textiles, refractories, and foam insulation.

A van uses foam and honeycomb structure to reduce overall weight by 50 percent.

Trains, autos, buses can use space-age materials that will reject solar heat and keep them 10 degrees cooler.

Aerospace foam provides a lightweight substitute for cork in tuna ships.

Railroad cars fabricated of aerospace materials are half the weight of steel cars.

The roof of the U.S. pavilion at Expo '70 in Japan is a fire-resistant coated beta fabric developed for aerospace. And the National Aeronautics and Space Administration has developed through its contractors a variety of fabrics, panels, plastics, and coatings that if used generally would eliminate most fire hazards in automobile, aircraft, and bus interiors, in home furnishings, and interiors of public buildings.

NASA even has nonflammable paper and nonflammable adhesive and acoustic tiles.

Ron Phillips, director of NASA's Office of Technology Transfer, recently told a convocation at Nebraska Wesleyan University: "In the areas of housing, urban transportation, and the environment, we are only now beginning to make the type of national commitment which was made in space in the 1960's.

"Since this country first made its commitment to space . . . we have vastly increased our technical know-how and put it to use. We have seen overall productivity rise significantly in the United States, and along with it we have come to realize both the magnitude of new problems associated with our growth and the new capabilities which may be brought to bear on them," he says.

COST PICTURE ROUGHED IN

"Since 1950, the real output of goods and services in the U.S. has grown as much as in the entire period of prior American history dating back to 1620," he explains.

Mr. Phillips says: "We cannot solve our most pressing problems by rhetoric."

Nor is change in itself a panacea for all problems, he adds. "The generation growing up in the '60's was born into the space age and a new era. It is learning a new science,

a new cosmology, a different view of man's place in the universe, and it is the recipient of vast new opportunities—on which it alone has the potential to act.

And these new technological opportunities have come mainly from aerospace.

And how much has space technology cost the nation? Less than the money spent yearly on hard narcotics by known addicts; about the same as that spent on tobacco or cosmetics; about half that spent in one city, New York, in legal gambling.

"Investments in space and aeronautics science and technology are, in fact, investments in our future," says Melvin S. Day, acting administrator for technology utilization at NASA. "The total impact, economic and social, will in the long run exceed even our own optimistic predictions," says Mr. Day.

And Dr. Heinrich Haymerle, permanent representative of Austria to the United Nations, told delegates to a recent international conference on communications in San Francisco that the rapid evolution of new technologies from space exploration is about to change the very basis of our existence.

"Perhaps the most challenging effect of the evolution of space technology will be the inevitably increasing gap in technology and involvement between those nations which conduct space programs and those not able to do so," he said.

Jane Evans has something to think about as she unwraps that meat for dinner.

Mr. CURTIS. Mr. President, the main arguments made for the shuttle are that it will, in President Nixon's words, "take the astronomical costs out of astronautics." It will "routinize" manned and unmanned missions into earth orbit. It will greatly reduce the cost per pound of our space launches, which at present run between $600 and $700 a pound because we are still using "one-shot-and-throw-away" booster vehicles. Employing the shuttle system, with a solid booster designed to be recoverable and an earth-orbiting stage that will land like a jet airliner and be reusable scores of times, we can drastically reduce the cost of space transportation.

Apart from the simple difference between relative launch costs there are considerations that will add to the expected savings during the next two decades of our space activity. One is the fact that the shuttle will be the workhorse during that period. It will be designed to take into orbit virtually all of the spacecraft we will be launching. Further, the shuttle will be capable not only of placing satellites in orbit, but repairing them on station—and even bringing them back to earth for repairs, if that should be necessary.

An additional saving will accrue from the fact that the shuttle orbiter lands on the ground and does not need an extensive naval deployment to assure its safe splashdown and recovery.

Still further, the design of the shuttle will reduce the forces encountered both in escape from earth's atmosphere and during reentry into the atmosphere. This will reduce the requirements for toughness of components and for redundancy, and thus lower the cost of designing, manufacturing and delivering spacecraft.

Some opponents of the shuttle have claimed that it will cost us several times as much as NASA has stated, because we must include operational costs as well as the price of research and development. This is analogous to saying that the real cost of a new $2,000 or $3,000 automobile must include the thousands of dollars needed to run it for its useful lifetime.

To my knowledge, the most authoritative study done of the cost-effectiveness of the space shuttle was, and continues to be, that completed by Mathematica, Inc., of Princeton, N.J., one of the most highly regarded independent consulting firms in the Nation.

Mathematica concluded that, to quote their report:

> The development of a Space Shuttle system is economically feasible assuming a level of space activity equal to the average of the United States *unmanned* program of the eight years ending 1971.

Based on this and other Mathematica findings, NASA has concluded that with the savings offered by the shuttle system—perhaps amounting to $6–$16 billion between 1979 and 1990—the number of missions undertaken during that period might well exceed the total to be expected using present launch systems.

Here I might add that one very useful service of the program will be to end the argument as to the relative merits of manned and unmanned space flight. To quote again, the Mathematica report states that:

> The economic justification of a reusable Space Transportation System is not tied to the question of manned versus unmanned space flight. Space programs used and analyzed are in line with the activity and funding levels of the unmanned United States space program of the 1960's (NASA, DOD, and commercial users included). If a substantial number of manned space flights were to be undertaken in the 1980's, a Space Shuttle System would also contribute significantly to lowering the costs of such missions and activities.

Mr. President, I doubt that many, if any, Senators would suggest that this Nation simply abandon its space program, with all of the earlier investment and accomplishments and all of the promise that it holds for the future of ourselves and all mankind. The shuttle program is a carefully planned and very logical next step in space.

Mr. CANNON. Mr. President, I yield 1 minute to the distinguished Senator from Florida.

Mr. CHILES. Mr. President, I had occasion to hear a couple of debates on the space shuttle and I am amazed at the agility of the opponents of the space shuttle, in the way they can adjust their arguments. As I listened to their arguments last year, I remember that one of their great concerns was they felt this money would peak up and that we would have tremendous appropriations that would have to take place to take care of the space shuttle and it would raise this $5 billion or $6 billion higher than in peak years. Now, of course, that is no longer a factor because NASA has been able to level out the program so that the budgets are on a more level basis.

There were various estimates as to the cost overruns, where we would see a program which started at a cost of $12 billion, but now we are talking about $5.5 billion to $6 billion as being the cost, because of the savings and improvements which have been made. So that it is pretty clear this is a program certainly in the interest of the United States and should be pursued. Time after time Congress has announced its policy to pursue it and I think that we will continue to do so today.

Now, Mr. President, I believe that the space shuttle is the single most significant program now planned to advance space travel, because without the shuttle, I do not believe we can afford to capitalize effectively on our scientific opportunities in space. Nor can we afford to capitalize effectively on our scientific and technological investment that have already given us space communication, weather satellites, and geodetic programs. The commercial and social benefits of the next generation of space applications—contributing to such fields as natural resources management, pollution monitoring, weather modification and climate control, earthquake prediction and avoidance, education, public health and safety, to name just a few—will not be fully realized unless we get costs down, efficiency up, and introduce a flexibility of action not earlier dreamed possible. That is what the space shuttle is for. That is why without it we will lose a program of great promise and value.

Our space research, thus far, has been responsible for the electronic pacer which, being implanted in a man's chest, keeps his heart beating at a normal rate; it is responsible for the monitoring of large numbers of hospital patients by transmitting accumulated data from each patient to a central control station for processing; it permits hospital use of a tiny sensor and radio transmitter that sounds an alarm if breathing difficulties arise. The NASA-developed diagnosis and treatment system originally designed to monitor astronauts' heart action offers an important aid to cardiac patients.

Through utilizing our space program we have developed a worldwide weather reporting and communications system, not the least of which is global television news which most of us now see and hear nightly. Millions of people in remote areas of Asia and South America, through communication satellite technology, will shortly discover the excitement of reading and writing—a discovery they have never experienced. Through weather satellite warnings, the space program has improved weather reporting, helping ships at sea navigate in cloudy weather. It is already a matter of record that through such satellite warnings, numbers of persons have been given sufficient warning so they were able to evacuate themselves and others in time to survive devastating hurricanes and other weather calamities. An underwater closed cycle breathing system, developed through space technology, permits man to dive down to depths of 1,500 feet for up to 12 hours, giving him a new degree of freedom in his underwater rescue and salvage operations.

I could very easily go on and on listing the achievements our efforts in space have resulted in, including high intensity lamps for street use and lightweight railroad tankcars weighing one-half that of

steel cars but more than equally as strong. And the list of benefits we are enjoying from our space program continues to grow. It is NASA's mission to develop space technology and applications to the point of practical benefits and then turn over the benefits and results of such efforts to operational organizations such as the Department of Commerce's National Oceanic and Atmospheric Administration or the Communications Satellite Corp. Tiros weather satellites and synchronous communications satellites are examples of such conversions.

The space shuttle will allow us to build and expand this technological research. We simply cannot afford to have a space program in the 1980's that relies on the expensive technologies of the 1960's—when we know we can do more, do it better, and do it cheaper through a reusable space transportation system.

The space shuttle will consist of a booster and an orbiter, both of which can be reused up to 100 times. The shuttle will have the capability of blasting off into orbit, linking up in space with other craft, then returning and landing like a conventional jet airplane. The shuttle is a concept that will make space as available—technically and economically—as the airplane has made long distance travel. Like an ocean vessel or an aircraft or a rocket, an economical space transportation system has a role to play in exploration, in science and technology, and if necessary, even in defense.

I realize there are those who question this space effort at a time when so many down to earth social programs have to wait in line for a share of the Federal dollar. But I think my listing of only some of the benefits we have received from our space effort thus far can be considered to be very concrete achievements for the social good.

Today each of us is already spending 43 cents of every tax dollar on social action programs—welfare, health, education, community development, housing, and so forth—and we only spend 1½ cent of every tax dollar on space research and technology. To contend that putting the 1½ cents on top of 43 cents would solve our social problems is unrealistic—and think of the loss to the Nation if we had no space program.

In addition to the concrete benefits I have mentioned, which I think are the top priorities involved here, there is the factor of economy to consider. I think the basic premise we must understand is simply that the United States will continue to have an active space program from now on. We must also realize that our present systems for getting into and using space are much too complex—and costly. We need a whole new approach to make space practical and economical to all users. The shuttle is such a system. Because it is reusable, we will no longer have to throw each element of hardware, booster or spacecraft away after only one use.

By reusing the two-stage shuttle vehicle for a maximum of 100 flights, NASA hopes to reduce the cost of space exploration. The launching price of payloads, the agency believes, can be reduced from nearly $1,000 a pound at the present level to less than $100 a pound. The shuttle is first, foremost, an economical transportation from earth to space, and back to any point on earth.

The shuttle will be able to be used for launching scientific satellites into earth orbit from inside the orbiter vehicle's huge cargo bay, measuring 60 feet by 15 feet. It can be used to retrieve satellites for repair and updating so they can be used again. And when Congress has determined what part man will play in future space explorations, the shuttle can ferry men and supplies to earth-orbiting stations, which would carry up to 12 men on long-duration missions. It will be able to repair, modify, or update unmanned payloads in orbit.

Mr. President, when the goals of the Apollo program were first enunciated, before detailed designs had been even started, before all of the developmental difficulties had been assessed, NASA said that it would cost between $20 and $40 billion to land men on the moon and bring them safely back. By the time the Apollo 17 mission is completed and the Apollo flight program has come to an end, NASA will have spent about $23 billion on this most successful enterprise. As far as meeting the initial objective of safe manned lunar landing and return, NASA accomplished that for some $19 billion, or even less than their initial, least conservative, estimate. Today Mr. President, we have every reason to believe that NASA has learned to estimate even more closely: There is, according to NASA sources, a good probability that they can bring the shuttle into being for a price less than their estimate.

In conclusion, Mr. President, let me point out that I am fully aware of the variety of arguments often used in opposition to the program: Such as, "the shuttle is an example of a perpetuation of bureaucratic interests"; or "We can do the same space program without the shuttle and for less cost." Let me assure my colleagues, I have studied the program carefully, listened to the arguments and heard them all, one by one refuted. Much of our national security is involved with space—and the shuttle's flexibility will add enormously to our capabilities while at the same time reducing their costs. Much of our future will be engaged in learning to live intelligently within the limited confines of "Spaceship Earth"—and it will be shuttle payloads that will give us the information we must have to make wise use of our land, air, and water resources.

A major environmental contribution now in the development stage, but not yet operational, is the earth resources technology satellite—ERTS—which may have the greatest potential of all for realizing hard economic returns from space exploration. It is a system for keeping satellite watch on the globe's natural resources with the aim of better managing nature's bounty. Its objective is to alleviate some of the world's paramount ailments by helping to produce more arable land, more water, food, clothing, shelter, and fuel to meet the needs of a population that is growing at an alarming rate. Two other specific environmental benefits from space exploration are the control of smoke plume emissions from airplane engines and the development of a quiet engine to reduce aircraft noise. Atmospheric pollution is under attack also in a program initiated by the Langley center for the development of an advanced type of sensor to measure carbon monoxide concentrations.

The real goals of space are to use its unique characteristics for human good—communications monitoring and managing our environment, discovering the laws that govern the solar system and the universe. Many of our problems today, such as pollution, energy, hunger, natural disasters, delivery of medical care, and exchange of information, can be directly attacked through proper applications of space technology, science, and systems. I believe the space shuttle will help in finding the solutions to these problems and will make our goals technically feasible and at the same time financially attractive. In short, I feel there is no other realistic long-range space program that can even approach the benefits that the shuttle provides.

Mr. GOLDWATER. Mr. President, I ask unanimous consent that an article I prepared for Parade magazine, expressing by backing of the space shuttle be printed in the RECORD.

There being no objection, the article was ordered to be printed in the RECORD, as follows:

THE CASE FOR THE SPACE SHUTTLE

(By Sen. Barry Goldwater)

The case for the space shuttle is a case for human progress.

That is the only possible way to group all of the compelling argument for speedy adoption by Congress of a program to close the technology gap and open new frontiers of useful knowledge.

In the vernacular of the day, the Nixon Administration's space shuttle project is a "now" program designed for the practical application of new scientific and engineering facts to the pressing problem of a changing world.

It represents a new era of exploration and discovery. It is a switch from the glamour phase of space spectaculars such as moon landings. Actually, it is an investment in the future—a future which hopefully will prove to be the most materially abundant of all times.

WHO NEEDS IT?

Who needs the space shuttle? The answer to that question is, just about everybody. Let me explain:

1. The world needs the space shuttle because it is the most practical approach yet proposed to the question of opening up the frontiers of space on a practical basis.

2. The United States needs it because it provides a method for keeping this country in the space race at greatly-reduced costs.

3. The scientific community needs it to keep the superb research apparatus of NASA in fruitful operation.

4. The American people need it because it might supply the answers for today's pressing domestic problems such as pollution and shortages of transportation, food, power resources, etc. In addition it may enhance our capability in fields such as agriculture, forestry, fishing. It might even pave the way for the use of weightlessness and the vacuum of space for manufacturing purposes. And it certainly would revolutionize such activities as communications and navigation.

5. The American economy needs the space shuttle because it will help, in the immediate future, to put some 50,000 aerospace workers back to work and holds out the future promise of whole new industries based on information collected during repeated forays into space and back.

SPACE MODEL T

If this nation is able to produce a reusable shuttle that could cut the cost of putting a pound of matter into space from $900 to $100, the potential is almost limitless. The space shuttle has been variously described as a vehicle which could do for space travel what the Model T Ford did for automobile use and what the Wright brothers flight did for travel in the air. Yet, this potential is lost on some mossback liberals who are attempting to hold back the future and maintain the status quo by pumping more billions into the welfare state.

Ironically, the opponents of the space shuttle, led by my colleague from Minnesota, Senator Mondale, are using the initial cost factor in an attempt to defeat a program aimed at vast, continual savings in future years.

They insist that the development cost of 5.5 billion dollars (spread over six years) is an example of misplaced priorities and that the money earmarked for it should be channeled into social welfare programs instead. They are insisting that government officials prove beyond any doubt that measurable benefits will be derived when the program is in full operation. This is like asking the Wright brothers after their first flight to make a projection on the practicability of air travel and the extent to which it would develop in future years. It would be like asking the first man to land in America what he foresaw for the future of the vast, empty, hostile land he had discovered.

OUR NEW FRONTIER

In other words, the opponents of the space shuttle program do not understand or refuse to recognize the validity of the argument that space is the new frontier. They would rather discount the whole thing as an aerospace boondoggle aimed at creating thousands of jobs in a national election year.

And, of course, the opponents again are quoting their claims that the space shuttle is nothing but a colossal waste of the taxpayer's money.

In this connection, it is important to understand that the space shuttle is primarily an engineering project rather than a scientific project. Some of the scientists who have lent their names to objections to the space shuttle have been in fields which were confined to only small facets of the project. Thus, for an impartial view I should like to quote what Mr. Charles H. Townes, chairman of the Space Sciences, and professor of physics at the University of California, said about the program on October 21, 1970:

"A successful space shuttle, including further lowering of cost and the possibility of assembly and adjustment of equipment in space, should produce a marked change in the style with which science and space application are carried out . . . I believe that its study and development should be pursued with vigor."

MORE SUPPORTERS

Another view was given by Raymond L. Bisplinghoff, chairman, Aeronautics and Space Engineering Board of National Academy of Engineering, in a letter to Dr. James C. Fletcher, administrator of NASA: "The board members would like to reaffirm their continuing belief that a shuttle-like vehicle is the key to a forward moving and economic space program beyond 1980."

On the space shuttle issue, I find myself in agreement with *The New York Times*—an event which is certainly not an everyday occurrence for a conservative Republican—in the belief that "the space shuttle has the possibility of beginning for space travel what the Model T did for the automobile age." This is certainly worth the investment proposed by President Nixon.

The PRESIDING OFFICER (Mr. STEVENSON). The hour of 2 p.m. having arrived, the Chair, pursuant to the previous order, will now recognize the distinguished majority leader, the Senator from Montana (Mr. MANSFIELD) for a report, after which time the Senate will resume its consideration of H.R. 14070.

Mr. MANSFIELD. Mr. President, I ask unanimous consent that my time be extended pending the conclusion of debate on the pending amendment.

The PRESIDING OFFICER. Without objection, it is so ordered.

Mr. CANNON. Mr. President, I yield myself 2 minutes to state that I have prepared a table which is on display in the back of the Chamber on the easel, for the benefit of Senators, which shows the cost of the program which has been so highly overstated during the course of this debate. I ask unanimous consent that a copy of this table be printed in the RECORD.

There being no objection, the table was ordered to be printed in the RECORD, as follows:

SPACE SHUTTLE ECONOMICS

| Shuttle nonrecurring costs: | Billions |
|---|---|
| R.D.T. & E. | $5.15 |
| Operating fleet | 1.0 |
| Construction of facilities | 0.3 |
| Total | 6.45 |

COST SAVINGS FOR FUTURE ACTIVITY LEVELS

| | Projected flights 1979–90 | Average number flights per year | Net cost savings from use of shuttle (billions) |
|---|---|---|---|
| | 720 | 60 | $8.1 |
| DOD/NASA/other baseline | 581 | 48 | 5.4 |
| | 432 | 36 | 2.4 |

Note: Economic studies show the shuttle to be a good investment at traffic levels averaging about 30 flights per year for NASA, DOD and all other users over the period 1979–90. Average number of U.S. space launches, 1967–71, was 43 flights per year.

Mr. CANNON. Mr. President, the suggestion was made that we are reducing other space-oriented programs because of the cost of the shuttle program. That simply is not true.

For example, the programs of aeronautical research and technology are up 70 percent this year over the previous year. The program on space application is up 10 percent over the previous year. The launch vehicles for unmanned programs are up 25 percent. The lunar and planetary program is up by 10 percent. Physics and astronomy is up 42 percent. I point out that the missions to be flown in the future are the same missions that otherwise would be flown on conventional launching vehicles. Economic studies show that if we have a level greater than 30 launches a year of all kinds, which is a lesser average than we have had over the past few years, the shuttle will show good return on its investment.

We have been committed to saving the taxpayers' money over a long-range program on the space shuttle.

Now, Mr. President, I thank the Senator from Minnesota for his views on the space shuttle program. The committee appreciates his great interest in its work. During its hearings the committee has looked into and tried diligently to answer the questions which he has raised about the space shuttle. I am somewhat disappointed in the statement of the Senator against the space shuttle. I would have hoped that the statement would have given some consideration to the committee's work. The committee finds that many of the Senator's criticisms of the program are based on misunderstandings of one kind or another. For example, he has urged the committee to consider carefully the views of scientists as he believes there is significant criticism of the space shuttle in the scientific community. He mentions specifically the Space Science Board of the National Academy of Sciences. I am sure there are scientists opposed to the space shuttle just as there are scientists for and against other questions and programs but that does not make the question or program scientific in nature or give the scientists any greater insight into the question or program than other people such as lawyers, machinists, electricians, schoolteachers, businessmen, housewives, or anyone else. And so it is with the space shuttle. It is not a scientific matter and for precisely that reason, the Space Science Board of the National Academy of Sciences has never taken a position in opposition to the space shuttle system. This is a misinterpretation of a single paragraph from a 147-page report prepared 2 years ago. This report addresses itself to the scientific priorities of space research for the decade of the 1970's, the decade before the space shuttle system will be operational. I should like the Senator from Minnesota to know that the committee carefully examines the reports of the Space Science Board for its views on space science and has found them to be of immense help. I think it is fair to say that there is a good working relationship between the Board and the committee.

If the shuttle is not a problem of space science, what is it? It is a problem of engineering and economics. The economists have said the shuttle will save the Government money. So what do the engineers say? Well, the Chairman of the Space Science Board, a distinguished engineer as well as scientist and a Nobel laureate, Dr. Charles H. Townes, has said this:

A successful space shuttle, including further lowering of costs and the possibility of assembly and adjustment of equipment in space, should produce a marked change in the style with which science and space applications are carried out . . . I believe its study and development should be pursued with vigor.

Another distinguished engineer now Deputy Director of the National Science Foundation, Dr. Raymond Bisplinghoff, former Chairman of the Aeronautics and Space Engineering Board of the National Academy of Engineering and former dean of engineering at the Massachusetts Institute of Technology, in a letter to Dr. Fletcher, had this to say:

First, the Board members would like to reaffirm their continuing belief that a shuttle-like vehicle is the key to a forward moving and economical space program beyond 1980. Based on the discussion of your briefings during our Board executive session on 17 June and a review of your letter to me of 19 June 1971, the Board would like to express satisfaction with your re-examination of the space shuttle program especially as it relates to your recognition of the possibility of smaller payloads, the use of external propellant tanks on the orbiter and the desirability of a phased approach to the orbiter and booster.

The Board was pleased to note the progress you have made on the Phase B studies and the quality of the work accomplished by your contractors. We concur with your expressed desire to continue such work until you have the soundest technical approach before proceeding with the development of the shuttle air frame.

Your long-range planning activities presentation served to reemphasize the importance of avoiding shuttle funding peaks in order to maintain a balanced space program. Your work on 'concurrent' versus 'phased' approaches to a space shuttle system should provide an improved basis for the programmatic decisions that must be made this coming year. We can hardly overemphasize our belief in the importance of this activity.

Another of our country's very distinguished engineers, Prof. Courtland D. Perkins, chairman of the Department of Aerospace and Mechanical Sciences at Princeton University and a former Assistant Secretary of the Air Force for Research and Development, testified before the committee as follows:

It [development of the space shuttle] will be hard to do, like many other large systems, but it is, I think, well positioned with respect to the state of the art after many studies of how we can reduce the risk to an acceptable point and at the same time not lose the benefits, I think that the Space Shuttle configuration as it is now oriented is about optimum.

Similarly, Dr. Brian O'Brien, one of the Nation's outstanding optical physicists and Chairman of the National Academy of Sciences' Advisory Committee to the Air Force Systems Command, has strongly supported the shuttle before the committee.

The National Society of Professional Engineers supports the development of the shuttle as does the Federation of Americans Supporting Science and Technology, a student group. I will not burden the Senate by quoting extensively from the testimony of these people and groups but merely refer Senators to the committee hearings beginning on page 1135.

The part of the Senator's argument against the space shuttle which leans heavily on rhetoric such as "burgeoning costs" and "the absence of any clear-cut policy to justify or guide the expenditures for the shuttle," is totally contrary to the committee view. The Senate Space Committee has examined the estimated costs for the shuttle and the policy under which the shuttle will be developed and has found that costs are being reduced and the policy clearly stated. The Senator uses higher shuttle costs than those given the committee but he furnishes no justification for these higher figures. The committee has examined space shuttle costs carefully and does not agree with the figures mentioned by the Senator. For example, in the Senator's statement to the committee, he says that even without any cost overrun, the estimate—his higher cost—is still deceptive since it does not include the sizable cost of the projected shuttle's payloads or its actual operating cost. That statement is incorrect on two points. First, in considering the cost of any transportation system, the cost of the projected payloads is never included—for example, the cost of operating a truck would be about the same whether it were carrying a load of oranges or a load of diamonds—and second, the actual operating costs of the shuttle have been fully discussed and are included in total space program costs.

The statement of the Senator from Minnesota which says the Mathematica report estimates that the shuttle's total program cost over a 12-year period will be $35 billion is incorrect. The Mathematica report does not say this. What the Mathematica report says is that this—the $35 billion figure—would be the cost of the entire space program over 12 years or an average of about $2.8 billion per year, much less than the fiscal year 1972 total of $4.6 billion; furthermore, the Mathematica report says that the same set of space launches without the shuttle would cost $7 billion more.

The Senator's argument against the shuttle brings up the matter of the manned earth orbital space station. My guess is that there will be a permanent manned space station in earth orbit but the development of the shuttle is not linked to this. The Senator's argument on this point repeats erroneous testimony by Dr. Ralph E. Lapp. Many of the statements by Dr. Lapp are incorrect as many of the figures he uses are misinterpreted and there is not much more that can be said about his views. For further rebuttal of Dr. Lapp's testimony, I refer Senators to the statements of Drs. Morgenstern and Heiss and of NASA which was placed in the RECORD of April 20, p. 13786 and May 5, p. 16086, or can be found in the hearings beginning on page 1088. Dr. Lapp is not an expert on shuttle technology, science, economics or management or on any part of the space program that I know of. Dr. Lapp's testimony, which is not an analysis nor scientific in any sense of these words, has not raised any serious questions about the space program or the space shuttle.

Mr. President, the Senator in his statement to the committee asked that NASA provide a clear and precise definition of a future space program. This I think they have done as well as possible with present day knowledge. I do not, however, think it is NASA's place to frame the total basic policy question of what we expect to achieve in space, for what purpose and at what cost. If it were, we would obviously have a much larger space program than we have today. Such policy questions in the large are for the administration and the Congress to decide.

With respect to future planning of the space program, as the Senate knows, the Congress does not establish space programs now—in 1972—for the 1980's. It would be foolish to try to do so. No one has the capability of finding out—of predicting—what the future will be. All men can do is examine extrapolations of past experiences, draw general conclusions and base current efforts on these conclusions. This is true not only for NASA but for all other Government departments and agencies, all businesses, organizations, and in all the long-range planning for other types of organizations. This is what NASA did and gave to Mathematica. Mathematica then examined numerous—hundreds in fact—different space programs and found out that if there are as many as 25 or 30 space flights per year, there is economic justification, in the sense that it will save the United States money to go forward with the development of the shuttle. The space age is here and is here to stay; and the United States, along with other nations, is going to continue to send both manned and unmanned spacecraft into space. But Mr. President, no matter how much study is done on what the United States will be doing during the 1980's in space, it is not possible now to say with any precision what missions will be launched a decade from now. On the other hand, the long term goals of the space program have never been in doubt. They are clearly set forth in section 102 of the National Aeronautics and Space Act of 1958 which I ask unanimous consent be printed in the RECORD.

There being no objection, the material was ordered to be printed in the RECORD, as follows:

DECLARATION OF POLICY AND PURPOSE

SEC. 102. (a) The Congress hereby declares that it is the policy of the United States that activities in space should be devoted to peaceful purposes for the benefit of all mankind.

(b) The Congress declares that the general welfare and security of the United States require that adequate provision be made for aeronautical and space activities. The Congress further declares that such activities shall be the responsibility of, and shall be directed by, a civilian agency exercising control over aeronautical and space activities sponsored by the United States, except that activities peculiar to or primarily associated with the development of weapons systems, military operations, or the defense of the United States (including the research and development necessary to make effective provision for the defense of the United States) shall be the responsibility of, and shall be directed by, the Department of Defense; and that determination as to which such agency has responsibility for and direction of any such activity shall be made by the President in conformity with section 201(e).

(c) The aeronautical and space activities of the United States shall be conducted so as to contribute materially to one or more of the following objectives:

(1) The expansion of human knowledge of phenomena in the atmosphere and space;

(2) The improvement of the usefulness, performance, speed, safety, and efficiency of aeronautical and space vehicles;

(3) The development and operation of vehicles capable of carrying instruments, equipment, supplies, and living organisms through space;

(4) The establishment of long-range studies of the potential benefits to be gained from, the opportunities for, and the problems involved in the utilization of aeronautical and space activities for peaceful and scientific purposes;

(5) The preservation of the role of the United States as a leader in aeronautical and space science and technology and in the application thereof to the conduct of peaceful activities within and outside the atmosphere;

(6) The making available to agencies directly concerned with national defense of discoveries that have military value or significance, and the furnishing by such agencies, to the civilian agency established to direct and control nonmilitary aeronautical and space activities, of information as to discoveries which have value or significance to that agency.

(7) Cooperation by the United States with other nations and groups of nations in work done pursuant to this Act and in the peaceful application of the results thereof; and

(8) The most effective utilization of the scientific and engineering resources of the United States, with close cooperation among all interested agencies of the United States in order to avoid unnecessary duplication of effort, facilities, and equipment.

(d) It is the purpose of this Act to carry out and effectuate the policies declared in subsections (a), (b), and (c).

Mr. CANNON. Mr. President, understanding the frailties of future planning, it would be inappropriate for NASA to decide whether or not to undertake the development of the shuttle based on a single approved space program for the 1980's. Such a course would be wholly impractical and unacceptable to the committee. The committee's view on such matters is that such undertakings as the shuttle must provide for different policy options and not lead the Nation into a single inflexible and possibly irreversible position.

The Senator's argument against the shuttle charged NASA with an ad hoc improvised approach and states that that have been feasible so long as NASA was operating within the general context of the moon program but with the end of the Apollo in sight, neither the public nor the Congress, and apparently not even NASA, has an overall strategy and purpose to guide the enormous investments we are now being asked to make. Mr. President, I must disagree with that general indictment of NASA and the Congress. I do not believe there is another program of the Federal Government as well structured and about which we know as much as the NASA space program. But even NASA's well structured program cannot throw a great deal of light on precisely what this Nation will be doing in space during the 1980's. What we do know is that we will still be going into space and those of us who have faith in the future believe we will be doing a lot more in space than we are doing today. We have this faith if for no other reason than we believe that the younger generations—our children and our grandchildren and their children—will know more and do more than we.

The Senator has charged:

If NASA has its way a commitment to develop the Shuttle inevitably will close off certain policy options and back us into others without the slightest public debate on realistic space goals for the future.

There are few programs that have been as much before the public and discussed as widely as the NASA space program, particularly the development of the space shuttle. I believe the vast majority of the public favors this development. Moreover, the development of the shuttle will not close off policy options; it will in fact do exactly the opposite: it will open up policy options which we could not have considered without the shuttle. For example, it will open up the policy option as to whether or not this Nation should have a permanent manned space station orbiting around the earth.

Mr. President, the Senator from Minnesota has stated that NASA was forced to change its design of the shuttle to make it politically salable. Mr. President, any undertaking in these United States as important as the shuttle system, should be and usually is a political decision. I believe that any agency which seeks to undertake large expenditures of public funds should be willing to place such decisions before the people for public scrutiny and as soon as that is done, the decision enters the realm of political decision. So I would fully agree that it was necessary for NASA to bring forth a space shuttle system that was politically salable.

It is true that last year NASA proposed a two-stage, fully reusable vehicle but found that budgetarily such a system was unacceptable and so ways were found to reduce the cost of shuttle development—but at some penalty of increasing the per flight costs. NASA reduced not only the cost of the orbiter but the cost of the booster. I simply do not understand why anyone would denounce an agency for reducing the cost of a program.

The Senator from Minnesota is correct that in 1970 NASA proposed both the space shuttle and the space station but that the funds simply were not available to support both undertakings. To the great credit of NASA they made a decision as to which was the more important and should be developed first and they decide on the space shuttle. I think that was the correct decision.

The statement that NASA has decided to proceed as soon as possible with the rapid development of the space station, however, is false and has no justification in fact. As I have stated earlier, I fully believe that we will have permanent manned space stations in orbit around the earth sometime in the 1980's, but there is no timetable for beginning the develpment of these stations and I think Dr. George Low, Deputy Administrator of NASA, is correct when he says such development is a matter of timing. New discoveries and new knowledge, such as we may gain from the Skylab program, could certainly bring about a demand for a permanent space station in earth orbit and in such a case we would be mighty glad that we had under development or in operation a space shuttle system. But the shuttle is justified on economic grounds without a space station of any kind, now or ever.

The Senator is also correct when he says that NASA wants this space shuttle program. They want it because they must find a cheaper way to get into and operate in space and there ought to be unanimous agreement on this objective. Today because of the cost of space programs, only a few scientists, engineers, and astronauts are able to use the vast resources of space. It is the aim of the space shuttle transportation system to make space available to a much larger group of people and to expand the uses of space for the people. For example, it is expected that the space shuttle will reduce costs to such an extent by the early 1980's that many of our graduate students in science, engineering, biology and other disciplines, will be running experiments in space to provide the raw data for their Ph. D. theses.

Mr. President, the authorization and appropriation of $227.9 million for the research and development and construction of facilities for the space shuttle for fiscal year 1973 in no way commits the Congress—or the administration for that matter—to funding this program next year or the year after that or the year after that. But this does not mean that we cannot take intelligent action now based on the best current information that we have on programs that will be important to the Nation in future years.

Mr. President, it is the committee's view, after considerable study, that the development of the space shuttle should proceed during fiscal year 1973. This does not commit the committee or the Congress to future funding. Future funding will be decided in the future by fiscal year as it has always been done for NASA.

Mr. President, the development of the space shuttle should be supported by the Congress for fiscal year 1973 and I urge the Senate to reject the amendment of the Senator from Minnesota.

Mr. MONDALE. Mr. President, I yield myself 3 minutes by way of summarizing.

This program, in addition to costing something like $35 billion over a 12-year period of operations—and, in addition, costing, according to the best estimates, three times as much as the present system of expendable boosters—is a program that has not been analyzed, has not been explained or justified, and has not been approved. We do not have the vaguest idea what we are committing ourselves to—what this $35 billion space program consists of.

I cannot believe that it is the policy of the Senate—in the midst of the various priority issues we are facing, with rising taxes, reduced services, with people not having enough money to live on, and with other problems that this Nation faces—to authorize a $35 billion program, having no idea what is involved in this program.

NASA's own contractor, Mathematica, Inc., concluded that a reusable transportation system like the shuttle "should only be introduced if it can be shown, conclusively, what it is to be used for and that the intended uses are meaningful to those who have to appropriate the funds, and to those from whom the funds are raised."

There has been absolutely no showing whatsoever as to what the shuttle will be used for. No wonder that Mr. Peter N. James—a former space system analyst from Pratt & Whitney who had studied the shuttle—concluded that—

The space shuttle program as currently conceived by NASA is not in our national interest. NASA's space shuttle expenditures thus far run into the millions of dollars and a good percentage of these expenditures has

been wasted because of poor planning and impatience to get the program under way. There is no evidence to indicate that things will improve, while there is supporting evidence to indicate things are getting worse.

Mr. James also believes that congressional approval of the shuttle at this point will contribute to "one of the most wasteful and poorly planned, dead-ended multi-billion dollar space age boondoggles of this century."

Mr. President, I hope that our amendment will be adopted.

Mr. President, I ask for the yeas and nays.

The yeas and nays were ordered.

NEED FOR THE SHUTTLE

Mr. SYMINGTON. Mr. President, the opponents of the shuttle have raised certain objections which are, when analyzed, mutually contradictory. I would discuss some of these contradictions.

First, there is the objection that the projections showing a space expenditure of $42 billion for the 12-year period starting in 1979 have not been approved by the Congress; therefore, it is meaningless to talk about future savings by using a shuttle system.

But Congress has not approved any such program. For that matter, even after we have completed action on this year's request, that does not mean $1 has been approved for the fiscal year 1974.

It is basic to our legislative process that programs such as NASA's must be authorized and appropriated anew each year. The actions of one Congress cannot bind the actions of the next one.

That is not to say, however, that the only projects we can approve here must be completed in 1 year; and it is not to say that we are prohibited from intelligent long-range planning on projects that are of vital importance to the future of this Nation.

I do not know what we will be spending on space in the period from 1979 to 1990. In the last 12 years, however, we have spent about $65 billion—or about $5.4 billion per year—so that $42 billion or $3.5 billion per year for our total space program from 1979 to 1990 does not sound unreasonable, especially when adjusted for the inflation that is with us and continues.

The opponents want ironclad assurance of approval of all missions we plan to fly for the next 20 years. This, of course, cannot be done. What we can do is to carefully review the requested programs each year, in order to ascertain if they are sufficient and suitable for this Nation's needs.

This we have done in detail, and that is why the committee is presenting this bill for the consideration of the Senate today.

Another area in which we hear contradictions concerns the role of the military. Some critics have said that if the shuttle is useful for the military, they should be the ones to develop it.

Testimony that we have on this point is that if the Air Force were to undertake the developments of the shuttle, large portions of NASA—including probably all of the Manned Spacecraft Center in Texas, the Marshall Space Flight Center in Alabama, and the Kennedy Space Center in Florida—would probably have to be transferred into the Air Force and out of NASA, because it is in the NASA people that the expertise resides.

Is that what the opponents want—a thoroughly militarized space program? I would not believe so, although I am much in favor of the military's using the shuttle, as they would a truck, or a cargo carrier, or any other form of transportation that we have, provided it would help them do a less expensive and more efficient job to protect the security of our Nation.

I think we did a wise thing in creating a civilian agency to bear the primary responsibilities in this area. NASA has done a fine job.

Another curious contradiction among the opponents of the shuttle is that they want us to continue to use our current boosters, which are thrown away and lost on every flight, while many of these same people are urging a greater effort in the area of recycling our resources.

I am a proponent of recycling and reuse of scarce or expensive materials; and while some parts of the current configuration will still be discarded, we will recover and reuse most of the shuttle.

In addition, many of our expensive spacecraft are now written off as total losses, even though the faulty part is only a small piece of the whole system, is relatively cheap, and is easily repaired or replaced if you could just get to it.

With the shuttle, repair and replacement will become routine. That will sharply reduce our losses of these expensive instruments. Perhaps this aspect of the space shuttle has escaped the attention of the opponents.

Mr. President, I have offered here today reasons why I support the space shuttle. I believe the experts who have presented us with detailed justifications for this shuttle have built a consistent and logical case for its development, and urge rejection of this amendment.

Mr. CANNON. Mr. President, I ask unanimous consent to place in the RECORD at this point an additional rebuttal to the testimony of Dr. Ralph Lapp before the committee on April 12, together with the letter of transmittal from the Congressional Research Service.

For the record, this testimony has already appeared in the CONGRESSIONAL RECORD three times, twice on April 19—pages 13409 and 13583, and once on May 4—page 15956.

I see that it has been placed in the RECORD again today.

Also in the RECORD are two previous rebuttals to Dr. Lapp's testimony, one by NASA on April 20—page 13786, and one by Dr. Klaus Heiss of Mathematica on May 5—page 16086.

Again I urge everyone who is interested in obtaining professional evaluation of the issues involved to read these detailed rebuttals. I am sure this will not stop the flow of hasty, misleading, amateurish, and admittedly adversary evaluations. But, I hope they will be useful to those who are seeking the truth.

There being no objection, the letter and statement were ordered to be printed in the RECORD, as follows:

THE LIBRARY OF CONGRESS,
CONGRESSIONAL RESEARCH SERVICE,
WASHINGTON, D.C., *May 9, 1972.*

TO: Honorable Clinton P. Anderson, Chairman, Aeronautical and Space Sciences Committee.

FROM: George N. Chatham, Specialist, Aeronautics and Space.

VIA: Charles S. Sheldon II, Chief, Science Policy Research Division.

SUBJ: April 12, 1972 testimony on the Shuttle given by Mr. Ralph E. Lapp.

The accompanying paper responds to your request for an analyses of the "adversary" views expressed by Dr. Lapp on the NASA Shuttle program.

Please let us know if we can assist you further in your study of this program.

Enclosures.

AN ASSESSMENT OF DR. RALPH E. LAPP'S "ADVERSARY VIEWS" ON THE NASA SHUTTLE PROGRAM

Dr. Lapp's "Statement on the Space Shuttle" was presented to the Senate Committee on Aeronautical and Space Sciences during hearings held on April 12, 1972. At these hearings a major economic analysis favoring the Shuttle program was reviewed by its authors, representing Mathematica, Inc. Requests to present opposing views were granted to two scientists, Drs. Gold and Lapp. Both were furnished copies of the Mathematica study. However, only Dr. Lapp appeared to present his arguments.

The Mathematica study is an extensive and detailed economic analysis derived from an even more extensive set of engineering systems studies. Dr. Lapp made no claim that he intended to present a scientific refutation. Instead, he would undertake an "adversary" argument which he defined as ". . . an attempt to exercise a set of checks and balances on the unprecedented activities of research and development." A more general definition of an adversary argument stipulates that is an argument in which data are selected to support a preconceived conclusion as opposed to an "analysis," in which the conclusion is not known until it emerges from the data.

Dr. Lapp's testimony consisted of thirty-two brief, numbered paragraphs which contained twenty-three arguments.

There were two suggestions that the contributors to the Mathematica study could have biased their results to favor a NASA desire or a business interest. Six points were critical of various Federal policies. Two attacked the logic of upgrading the NASA/DOD expendable boosters as an alternative to the Shuttle. Five were recommendations for further study. Eight of Dr. Lapp's arguments were directed against the Shuttle program.

BIAS

Bias is of course a pre-condition for an adversary argument, and at no time does Dr. Lapp say that he is unbiased—only that he is free of NASA's bias. He also suggests that "Since LMSC (Lockheed Missiles and Space Co.) is an aerospace company which would benefit from Shuttle contracts, it is questionable whether Mathematica, Inc. is justified in accepting the LMSC data without considerable adjustment for bias." He does not offer substance for his suspicion beyond this comment.

FEDERAL POLICIES

Dr. Lapp is correct in his statement: "First of all, I maintain that the United States has not approved a $42 billion space program in the current expendable category." He refers to costs projected over a twelve to fifteen year period, which appear in the Mathematica study.

The Nation's annual budgetary review and funding procedures commonly call for such projections or "run-out" costs. Yearly review, re-approval or cancellation is the standard and only procedure by which Federal projects

are executed regardless of the time ultimately required for their completion.

Therefore, the numerous "run-out" figures in the Mathematica report cannot be considered a challenge to the extent of Congress.

Dr. Lapp notes with objection that the Mathematica analysis justifies the Shuttle program on a joint basis on which the DOD requirements as well as NASA's and other civil users, are served. As stated by Dr. Lapp:

"This confusion of military and civil space programs persists throughout the Mathematica, Inc. report and makes difficult a realistic appraisal of the Space Shuttle in terms of the NASA program." He accurately notes that the DOD applications in the various mission scenarios studied, are quite significant in the economic justification. Dr. Lapp objects to a justification based on a civil/military blend. As he puts it: "If the Space Shuttle is intended to be a military vehicle, then I submit it ought to be justified and funded by the Department of Defense."

Mathematica estimates that about 30% of the shuttle payloads will be military. Their approach categories the Shuttle as a "common carrier" like a railroad. In this sense they have weighed the merits of a new "rail spur" based on their best anticipation of the business from all potential users, their names being less important than their business.

As an overview, multiple uses for a federally funded project are generally a positive influence in their justification. Multiple management, which sometimes goes with multiple funding, is common but adds to the complexity of a project. The manner of funding and management of large multiple use projects is so much a function of the nature of the project that no general policies can be established. They must be created and executed on a case by case basis. However, a multiple use facility or service may be managed and funded, it is generally considered a more effective use of funds than the "separate but equal" approach, military vs. civil airports being a notable exception.

Dr. Lapp, in noting that the twelve year projection of Shuttle flights, included 62 flights to the projected space station, suggested that the cost of the space station should be combined with that of the shuttle. A review of NASA planning reveals a broad spectrum of programs which call for a space station. Planning for such a station predates the planning for the Shuttle by many years. Hence NASA included the flights in their "user schedule" provided to Mathematica.

However, if the cost of the space station were added to the cost of the Shuttle program, it would also have been added to the cost of the program calling for continued use of the current expendables along with the mission profile required for the space station flights. This flight profile would have cost $3 billion more to perform with the current expendable than with the Shuttle.

The path taken by Mathematica throughout the study was to avoid all contests between the current expendables and the Shuttle in which the Shuttle would make use of capabilities not possessed by the current expendables.

The space station is the only satellite, the cost of which has not been added to the various mission profiles. It is also the only satellite which has not yet been reviewed by Congress in terms of its mission and costs. The space station is a major venture which could cost as much as $6 billion. Its mission is quite different from that of the Shuttle, a factor which will require that the space station be justified on its own merits as a separate project.

Finally, the 62 Shuttle flights to the space station do not affect the conclusion reached by the Mathematica study. The Shuttle is shown to be more economical than the current expendables with as few as 30 flights per year.

Finally Dr. Lapp suggests that the "15 year" payload costs, totalling $30 billion, projected by the Mathematica study is an increase over the current launch rate of one of the NASA offices (OSSA). He submits ". . . that such an increase in the tempo of the civilian space program has not been justified as a legitimate public expenditure." He then suggests that ". . . a more realistic figure would be $20 billion." He notes that such an adjustment would reduce launch costs to about $5 billion. He offers this assurance: "I further believe that if the scientific and technical community was given this figure as a ceiling, it would be possible to define an aggressive and rewarding space program for the 1975–1990 period."

Dr. Lapp's association of the $30 billion projection (398 payloads in 15 years) with the activities of OSSA was a mistake, understandable perhaps in view of the complexity of the Mathematica study. The figure appears in numerous options but is never restricted to NASA flights. Viewed as used in the study, the total does not reflect an increase in space activity for the Nation.

He applies a lower figure ($20 billion) to alter the totals of some of the Mathematica comparisons. However, his figure as well as his views are admittedly personal, not substantive and are therefore beyond the scope of this review.

UPGRADING EXPENDABLE BOOSTERS

The Mathematica analysis compared the total costs of space missions conducted with (a) current expendable boosters, (b) new expendable boosters and (c) the Shuttle system. They noted that new expendable boosters provided significant cost reductions over those now in use. The savings amply justified the required development costs. Both types of expendables, however, could not approach the overall gain provided by the Shuttle system.

Dr. Lapp noted that in the detailed cost breakdown, the NASA projection included funds for additional development of their current expendables. He found that by removing this sum, he could demonstrate that the current expendables are lower in cost than the new expendables. He calculates a total cost reduction of $3.75 billion, a saving which ". . . indicate no diminution of the unmanned NASA or DOD program." One would assume from Dr. Lapp's statements, that he recommends a continued use of the current expendables with no changes or additions. At least this was the basis he used for his comparisons with the Shuttle. However, his final recommendation takes a different view of expendables. He recommends recovery and refurbishment of the Titan-class launch vehicles and a consideration of new boosters, i.e.

"Thus I would recommend that NASA examine the possibility of a new launch vehicles of the non-shuttle class. In this examination, I would recommend that an attempt be made to standardize on a launch vehicle so that unit costs can be reduced."

Estimates of the additional development costs entailed in Dr. Lapp's recommendation can not be derived without an extensive analysis of the particular new boosters or alternatives he has in mind. His testimony does not detail these things.

It should be noted, however, that as an alternative to the Shuttle, the Mathematica study did consider new non-Shuttle boosters. The tables for comparison of various alternatives all show three columns: a) current expendables, b) new expendables and c) Shuttle.

Finally, the goal of "standardization" is shown to be a strong advantage of the Shuttle system.

THE SHUTTLE PROGRAM

*Uncertainties in Costing New Technology.* Both Dr. Lapp and Mathematica note in their testimony and reports that uncertainties cause initial cost estimates to be low. This well established fact has been the subject of a large number of studies, particularly by the Rand Corporation. Both Dr. Lapp and Mathematica cited the same Rand studies.[1]

The earlier (1965) Rand study noted original estimates were lower than final costs by an average factor of 1.8. The updated (1970) Rand study corrected this factor to 1.2 in light of improved estimating methodology.

The allowance for estimating error used by NASA and Mathematica is based on the Rand updated study and is 1.2. However, Dr. Lapp erroneously interpreted the two Rand studies as in agreement, both confirming the 1965 estimate of error as 1.8. In his words: "RAND studies (Alvin J. Harman "A Methodology for Cost Comparison and Prediction." Aug. 1970 RM–6269–ARPA and Robert Summers "Contractor Estimate and Prediction of Actual Weapons Costs" March 1965 (RM–3061–PR.)) show that contractor estimates are invariably low and that actual costs exceed the estimates by 80 percent." Then, acting on his misimpression, Dr. Lapp applied this 1.8 factor as a multiplier to the Shuttle estimates.

His use of this multiplier is the major but not the sole mechanism by which he derived his higher cost estimates of the shuttle program. He increased the NASA estimate for the Shuttle non-recurring launch vehicle costs by $650 million prior to applying his 1.8 multiplier but did not specify his reason.

*Estimates Derived by Averaging.* Averaging is useful to describe a group of quantities only when they are close to the same size. Otherwise, the process of averaging tends to mislead. A New Yorker may walk a quarter of a mile to work each day and fly to San Francisco once each month. A review of his movements could show that the average trip length is 240 miles at an average speed of about 200 miles per hour. This would not be helpful in describing his habits, however.

One of the strongest points made in the Mathematica study could be rephrased to say "There is no such thing as an average space mission." These missions, payloads and orbits vary over a range that prohibits meaningful averages. This characteristic of space missions is perhaps the main reason for the length and complexity of the Mathematica analysis. In their assessment of competing launch vehicle systems, each type of mission had to be analyzed separately both as to launch vehicle costs and payload costs.

Despite the inappropriateness of extracting averages from such data, it is commonly done. NASA as well as the aerospace industry have given wide publicity to figures derived from averaging such as "cost per pound of payload to launch" and "average cost of payloads per pound."

Dr. Lapp and Mathematica are both sharply critical of the error and misleading nature of these commonly quoted figures. In contrast to Mathematica, however, Dr. Lapp does not object to the process of averaging data on a mix of different space missions. His objection centers around the error and misleading nature of the widely published averages. He cites a number of typical quotations: To make specific the projection of shuttle transportation costs, I quote from Dr. Fletcher's Jan. 5, 1972 White House statement: "It is estimated that the reusable space Shuttle will reduce the cost per pound of putting a payload into space from between $600 and $700 to $100." NASA Associate Administrator Dale D. Myers testified last year that

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[1] *Contractor Estimate and Prediction of Actual Weapons Costs,* Rand, March 1965 and *A Methodology for Cost Comparison and Prediction,* Rand, August 1970.

the cost might be reduced to "as low as $75 per pound of payload." Aerospace industry officials (House hearings, Science and Astronautics Committee, FY 72 Pt II, page 482) have projected costs as low as $50 per pound."

Dr. Lapp substitutes his own average based on projected Shuttle cost data from the Mathematica study:

(a) 514 Shuttle flights at a total development and procurement cost of $13.1 billion indicates an average cost per flight of $25.5 billion.

(b) An average payload of 5,000 lbs. placed in orbit for $25.5 million indicates a pound-in-orbit cost of $5,100.00 for transportation.

(c) Using Shuttle operating costs only, 5,000 lbs. in orbit indicates a pound-in-orbit average of $2,250.00.

(d) Using a 5,000 lb. average payload, 514 flights would place 2.6 million pounds in orbit. At Mathematica's estimated payload cost of $23 billion, the average price per pound of payload, using the Shuttle system becomes $8,800. Dr. Lapp emphasizes this sum with the addition: "Expressed in other units, Shuttle payloads will average $550 per ounce. Thus Shuttle payloads will average ten times more expensive than their weight in solid gold."

The table[2] referenced by Dr. Lapp as the source of his data also contained the comparison costs of today's expendable boosters. His computational method applied to the data for expendable boosters yields the following comparison:

| | Expendables | Shuttle |
|---|---|---|
| (a) Cost per flight (514 flights) | 25, 500, 000 | 25, 500, 000 |
| (b) Cost per pound in orbit (total transportation) | 5, 100 | 5, 100 |
| (c) Cost per pound in orbit (operating costs) | 5, 000 | 2, 250 |
| (d) Cost per pound payload fabrication | 11, 500 | 8, 800 |

The above tabulation is intended only to complete a comparison which if left uncompleted could be misleading. No importance other than this is ascribed to these averages, since they like others, quoted earlier by Dr. Lapp, have been based on data in which averaging is inappropriate.

Dr. Lapp made some objections, which were mentioned earlier, about the Mathematica costing of the expendable booster projections. Namely, he deleted a sum for upgrading the current expendables and reduced the total payload and launch projection. His recommendations for a smaller overall space program would affect the figures in both columns, pressing them upwards. However the amount cannot be determined without an extensive analysis.

In the comparison of the two competing systems, it is helpful to note that 62% of the $25.5 million cost per flight of the Shuttle is included to amortize the development and other non-recurring costs in 514 flights. The upgrading of expendables is also amortized over the same number of flights but only 13.5% of the $25.5 million per flight is for this purpose.

In other words, the cost per flight of the 515th flight and flights thereafter would show the following change:

a) Shuttle: $9.7 million cost/flight

b) expendable: $19.5 million cost/flight

Mathematica notes in their report that the actual mission profile provided to them by NASA and DOD totalled 624 flights but was reduced by them (Mathematica) to 514 flights. These additional flights which NASA and DOD expect to make would favor the Shuttle by about $1.0 billion in launch vehicle costs.

[2] Table 0.1, page 0–8 Mathematica Economic Analysis of the Shuttle System, Executive Summary, Jan. 31, 1972.

*Payloads.* Satellites have been called "space jewelry" because it is not at all uncommon for a payload to cost between $20,000 and $40,000 per pound. In fact these figures are cited by Mathematica (3) as typical NASA costs for payloads. Publicity about their construction and function gives the impression that they occupy the leading edge in the state of the art for their particular function.

Sometimes a satellite does occupy the leading edge of one or more arts—but not the art for which they were built. All of the functions to be performed by a given earth resources satellite, for example may be simple and routine in terms of the available art. However, in practice, a size and gross weight is targeted. Container weight, stabilization systems, fuel and power supply are estimated. The residual space and weight are then allocated for the working part of the satellite. From this point forward, a workable satellite gradually emerges from trade-offs and re-designs. Electronic circuitry can be miniaturized and shaped to fit available hollows but physical limitations are approached on just how much an optical system can be folded or how light and small a movable set of optical filters can become. Shutters, timers, film or tape transports, and a myriad of other items must be designed, tested and finally integrated. How much fuel can be carried for stabilization; how much power; how much tape; how many functions originally planned must be compromised or eliminated? The battle centers around the outcome of weight and size reduction engineering. A little larger battery here or another few feet of tape may add significantly to the life of the satellite and fractions of an ounce become major issues. Weight and size reduction, not the incorporation of new art, has always been the major challenge and the major cost of satellite design and construction.

The Mathematica study shows some economy in the use of the Shuttle System in lieu of the conventional expendables. However, it shows a much greater saving in the relief from the size, shape and weight restraints imposed by the current expendable boosters.

Finally, it should be noted that no one, whether his interests are commercial or scientific, abandons a productive machine costing between $20 million and $100 million because the art has now produced a somewhat more efficient electronic circuit. Furthermore if the user of a working satellite can give his machine a new lease on life by replacing a depleted fuel cell, a tape canister, or a new circuit module, he is then in a position to weigh this relatively minor cost against the cost of building and launching a new one. He does not now have this option, and a review of satellite history indicates that the option is attractive. A particularly strong case in point may be seen in the large observatory satellite program. Two of the three of these $100 million spacecraft never became operational, but could have been saved had they been carried aboard the Shuttle. The third observatory operated at reduced capability due to the failure of internal circuitry.

Dr. Lapp testified to strongly contrary views. He notes that if Shuttle-borne satellites are to become larger and heavier, then the cost of launching a given satellite can not be compared on a pound for pound basis between the expendables and the Shuttle. He also states that: "It is difficult to state how much the higher payload capacity of the Shuttle allows a reduction in payload costs on a pound basis, but the trend is contrary to the thrust of technology which aims at more compact, solid state, instrumentation of high reliability."

It must not be overlooked that in the particular analysis from which Dr. Lapp has drawn his data, a nominal payload of 5000 lbs. was used for their comparison of the expendable system and the Shuttle. Depending upon the orbit selected, the Shuttle is capable of taking payloads up to a maximum of 65,000 lbs. The nominal load of 5000 lbs was selected for many reasons, one of which was to make the comparison conservative. The choice permitted the analysis to handicap the shuttle thus favoring the current expendables.

There is a second, perhaps more important reason which Mathematica did not explain but left implicit in their data. One of the first points which must be known about a new transportation vehicle is its "break-even point." That is, what percent of its cargo capacity must be filled to pay the costs of owning and operating the vehicle. The user knows that his costs remain the same whether his vehicle hauls a minor load or a full load. This is true, of course, whether the vehicle be a ship, a moving van or a Shuttle.

Therefore a growth in the weight of the Shuttle payload does not bear upon the Shuttle operating costs used in the Mathematica comparison. Contrary to Dr. Lapp's belief, however, the relaxation of the current weight and space requirements are shown by the Mathematica study to have a dramatic effect in cost reduction.

Dr. Lapp's alarmed statement, quoted earlier, emphasized his anticipation that Shuttle payloads could cost 10 times their equivalent weight in gold. This would actually be a sharp drop in cost from their current average of about 100 times the cost of their equivalent weight in gold.

In brief, the point of the Mathematica payload analysis was to suggest that the superior lifting capacity of the shuttle would remove the necessity of producing "space jewelry". These "jewels" came into being because of launch vehicle limitations, not because small size and compactness represents the "thrust of technology." While size reduction is a long standing historical trend in advancing technology, it has always been a by-product to the primary goal—that of seeking and applying new principles which would first make possible a desirable result, then steadily reduce its cost in energy, material and money.

Mr. CANNON. Mr. President, Drs. Tom Gold and Brian O'Leary filed statements with the committee in opposition to the shuttle.

The committee was particularly concerned with some of the charges made by these gentlemen about the military uses of the shuttle. Consequently, we asked Secretary of the Air Force, Dr. Robert C. Seamans, to comment on these remarks.

We also have rebuttals from NASA and from Mathematica on these statements which I hope will help clear up any ambiguities that might have arisen as a result of these scientists' views.

Mr. President, I ask unanimous consent that these rebuttals be printed in the RECORD.

There being no objection, the material was ordered to be printed in the RECORD, as follows:

DEPARTMENT OF THE AIR FORCE,
*Washington, May 9, 1972.*

Hon. CLINTON P. ANDERSON,
*Chairman, Committee on Aeronautical and Space Sciences, U.S. Senate.*

DEAR MR. CHAIRMAN: I am pleased to respond to your letter of April 18, 1972, concerning the testimony of Dr. Gold and Dr. O'Leary.

Although most of both statements pertain to areas that can best be answered by NASA, particularly the NASA program content and the Mathematica study, I would like to provide some general comments and address those points specifically applicable to DOD considerations.

Our achievements in space have greatly

exceeded our expectations of only a few years ago and I strongly feel that we have only begun to understand and tap the vast potential of the space medium. To realize fully the potential that the medium has to offer for applications, for science, for defense and for the betterment of mankind, we must improve our means for operating in space through increased capability and flexibility and decreased operational costs. I believe that the Shuttle, designed with the proper capabilities, offers such potential and should be an ingredient of our total national space program.

The points raised by both papers are ones that face us continuously in our decision process of where to best apply our limited resources for the best interest of the nation. NASA is faced with providing a balanced program of science, application, technology and development. Normally, each of these areas is strongly promoted by advocates within their respective fields, sometimes without due consideration for needs in other areas. An agency must recognize the needs of the various disciplines under its authority. Within the resources available, NASA, in my judgment, has structured a balanced program.

Both papers question whether the Shuttle development should be initiated because of potential costs and application uncertainties. These questions are raised on every major program and were specifically addressed. Our present assessment of them indicates that we should proceed with development of the Shuttle. The phased approaches, or step-by-step development, which I support and which NASA is undertaking, is designed to identify the resolve cost, schedule, operational concept and technical uncertainties. As I pointed out in my testimony, the Preliminary Design Review (PDR) in late 1973 will result in another critical management review of these parameters and provide us better data for further assessment of the system capability and utility.

Our assessments to date have dealt primarily with present identifiable missions in both low and high energy orbits. Shuttle missions to the higher orbits require an additional upper stage as do missions with present day launch systems. Such existing stages could be intially adapted for use with the Shuttle. However, the Shuttle will offer the additional economic potential of reusing such stages. The need for an upper stage has not been treated as an afterthought, as noted by Dr. Gold, but is appropriately reflected in the phased development approach. The operational aspects involved for high energy missions have been considered in both DOD and NASA Shuttle System analyses and were factors in vhicle configuration and performance definition and are being considered in the design and utility assessment.

Regarding Dr. Gold's observation on Shuttle vulnerability in the event of military conflict, we feel it will be no more vulnerable to accident, sabotage, or hostile acts than our present expendable launch vehicles. Our present launch sites and supporting facilities are vulnerable to enemy action. To harden our space launch capability, whether for expandable boosters or for the Space Shuttle, would be very costly. For this reason, we have elected to achieve an acceptable survivable space capability by reducing the vulnerability of our satellites to hostile enemy action and by having an adequate number and mix deployed prior to any conflict. The Shuttle could make it easier to reach this goal if it achieves its objective of reducing the cost of placing our satellite systems in orbit. Regarding accidental loss, the DOD would not completely phase in the Shuttle System until its reliability is understood. Also, potential attrition losses will be considered in determining the fleet size.

Dr. O'Leary stated that the DOD was the prime driver of the configuration and payload bay size. As I have emphasized at every opportunity, maximum national utility should be the criteria upon which the Space Shuttle development is based. Thus, the configuration and performance specifications for the Space Shuttle reflect the needs of both NASA and DOD missions. This includes the cargo bay size as well as cross-range performance. NASA also requires upper stages for high energy missions which drive the low earth orbit payload weight and size capability. The required crossrange performance among other things permits maneuvering to a safe landing area in case of an abort within the first revolution around the earth. NASA needs this capability as well as the DOD.

Dr. O'Leary raised the question of Air Force contributing to the Shuttle investment. There are several ways to fund and manage a development program, such as the Shuttle, which involves more than one agency. In our experience, one agency should have prime management responsibility for the overall program, coordinating the requirements with the other agency. Our working relationship with NASA on this program has been outstanding and they have been very receptive to our suggestions. NASA/USAF cooperation on efforts of national importance dates back to the days of the NACA, the predecessor to NASA. Our mutual interests in space, like those in aeronautics, have led us to consider ways to meet the needs of both agencies through joint efforts and to foster national leadership in technological advances and capabilities. The Space Shuttle program is one such example. Also, I would like to point out that the NASA responsibility for development is consistent with their charter since the system is not uniquely for DOD. The Air Force intends to procure vehicles and equipment as the Shuttle economic and performance objectives are met.

In summary, I feel that the Shuttle offers potential for improving our means for operating in space, advancing our technologies and opening up new avenues for applications of space which would benefit all of mankind. As I stated before your committee in March, I believe the next logical step is to move toward development of the Space Shuttle.

I hope that the foregoing information is helpful to you. Please let me know if we can be of further assistance.

Sincerely,

ROBERT C. SEAMANS, Jr.

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MATHEMATICA, INC.,
*Princeton, N.J., April 26, 1972.*

Mr. CLINTON P. ANDERSON,
*Chairman, Committee on Aeronautical and Space Sciences, U.S. Senate, Washington, D.C.*

DEAR MR. CHAIRMAN: Thank you very much for your letter of April 18, 1972 and the opportunity to comment briefly on the statement of Dr. Thomas Gold concerning the Space Shuttle.

Basically, Dr. Gold raises three questions concerning the present Space Shuttle decision by NASA. We will try briefly to comment on all three of them.

The *first question* raised by Dr. Gold is whether NASA should embark now on a plan that will engage NASA in a long range development program in the 1970's or whether NASA should rather concentrate more on developing the many useful space applications and space sciences which Dr. Gold accepts and supports.

Dr. Gold cites great advances made in communications engineering, television, telephone and data transmission systems using space based systems. On the applications side, as a matter of fact, we would advocate, in addition to communications, a variety of added programs where we are convinced NASA can make great contributions in the 1970's and 1980's. They would include earth resource satellite programs, meteorology satellite programs, space based navigation systems, and a variety of other economic application programs that we can foresee in the next decade.

In space sciences, Dr. Gold advocates, implicitly, a continuation of the space sciences program of NASA at least at the current level.

After looking at the economics of the Space Shuttle System (and keeping in mind the substantially reduced non-recurring costs of the new Space Shuttle development in the 1970's), we feel that the correct answer to Dr. Gold's first question is not an opposition of space transportation technology development versus more applications and space science during the 1970's, but rather the emphasis of *both*, that is the forceful development of space applications and space sciences in the 1970's as well as the development of a new space transportation system that actually promises to bring about much expanded space applications as well as space sciences programs in the 1980's. The Space Shuttle System promises to reduce the cost of space programs anywhere between 30% and 50%, and possibly more. The new Space Shuttle System promises economic advantages as well as new technical and scientific opportunities that justify this program on its own merits.

The *second question* raised by Dr. Gold is whether the plan for the Space Shuttle is technologically sound and whether the favorable economic estimates are realistic.

As to the first part of this question, we are not qualified to discuss this question meaningfully. Our experience lies in economics. May we add, however, that it is important to understand the substantial technological differences between the original two-stage Space Shuttle (that seem to underlie many of Dr. Gold's statements) and the new Space Shuttle version now proposed by NASA to be developed in the 1970's. The *relative* technological, as well as economic risks, in developing this new system seem to us substantially reduced.

With regard to the favorable economic estimates concerning the Space Shuttle System and the cost of space programs in the 1980's, we would be more than prepared to discuss this in detail with Dr. Gold. There is substantial evidence available that, in addition to the work performed for us by different aerospace companies, there exists now work done independently from our study efforts that confirms, if not exceeds, the favorable estimates claimed for the Space Shuttle System when looking at individual space programs. In balance, it is *our* judgment that the estimates used in our analysis are realistic. But this is, of course, a matter of judgment. We can only express our willingness to review these areas with Dr. Gold jointly.

The *third question* raised by Dr. Gold regards the capability to predict the utility of the system 15 to 20 years ahead.

Obviously, the capability in economics as well as in scientific and technological developments to look ahead even 4 or 5 years is quite limited. With regard to development programs that have a gestation period of 8 years and an operational period expected to be 12 years or more, of course, the difficulties are compounded. What Dr. Gold states, quite correctly, is that decisions that affect us for 10, 15 or 20 years ahead are intrinsically decisions that have associated with them a considerable degree of uncertainty. Yet we have to make such decisions every day.

It is one thing to state that uncertainties exist with regard to predicting accurately the use of systems 15 to 20 years ahead, and, on the other side, to reject, implicitly at least, systems that do affect us 10, 20 or 30 years ahead of time. Any economic decision has associated with it some degree of uncertainty and risk. It is the task of economists to help

the decision maker to make correct decisions *in the face of uncertainty.*

When studying the Space Shuttle decision, we state quite explicitly that these risks and uncertainties exist, both for the costs of new space transportation systems as well as for the demand for space transportation. *As a consequence of this uncertainty we formulated many alternate space programs,* in addition to those provided to us by NASA and the Department of Defense. Given the uncertainty that exists with regard to the use of *any* space transportation system, we varied the *total* activity level as well as the *mix* of space programs over a range of activities that do allow for nearly any composition yet proposed by different agencies and users. Thus, we varied for the 1980's the activities in the United States space program from a low of about 25 to 30 Space Shuttle flights per year to a high of 55 to 60 Space Shuttle flights. And we varied substantially the composition and contributions of the demand made for space transportation systems concerning the mix between NASA activities (sciences, applications, manned space programs), other civilian demands, and the Department of Defense demands for space transportation.

Allowing, therefore, for a very wide range of the possible composition of space programs, we came to the judgment that the new Space Shuttle System is economically justified.

There remains, of course, the additional question of the uncertainties regarding the non-recurring costs of the Space Shuttle System. This area needs careful examination and management control. A careful understanding and interpretation of the results of the economic analysis will lead to the conclusion that there is a substantial margin that can be allowed for in terms of non-recurring "cost growth" for the Space Shuttle decision still to be economically acceptable.

The most important development in the past year is the reduction in estimated non-recurring costs from somewhere around $14 billion to somewhere around $7.5 billion for the Space Shuttle System. This is a reduction of nearly $7 billion of costs that would have been incurred in the 1970's and that now will not be incurred, and yet capability. NASA has substantially adapted its development program to answer exactly the questions and issues raised by Dr. Gold in his second and third questions.

There are additional points that need to be raised with regard to some specific remarks by D. Gold. Yet, we do think that most of them have been answered in the rebuttal by Dr. Heiss regarding Dr. Lapp's testimony concerning the economics of the Space Shuttle System.

In conclusion, we invite Dr. Thomas Gold to review with us what has gone into the economic analysis as well as, if questions should exist, concerning the method of the economic evaluation performed.

Most sincerely yours,

OSKAR MORGENSTERN,
*Chairman.*

KLAUS P. HEISS,
*Director, Advanced Technology Economics.*

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MATHEMATICA, INC.,
*Princeton, N.J., April 26, 1972.*

Mr. CLINTON P. ANDERSON,
*Chairman, Committee on Aeronautical and Space Sciences, U.S. Senate, Washington, D.C.*

DEAR MR. CHAIRMAN: Thank you very much for your letter of April 18, 1972.

As you know, we commented in detail regarding the thoughtful comments by Dr. Thomas Gold regarding the Space Shuttle System. With regard to Dr. Brian O'Leary's testimony to which this letter is addressed, we would like to refer you to the detailed rebuttal given by Dr. Heiss to the testimony of Dr. Ralph E. Lapp. Most points of Dr. Lapp's testimony overlap with that of Dr. Brian O'Leary and therefore we refer you to that rebuttal.

Nevertheless, we assigned Dr. Kan Young to review the statements of Dr. O'Leary and some comments in that review refer also to those of Dr. Thomas Gold. A copy of that internal working memorandum is enclosed.

We would like to take again the opportunity to state that from the beginning of our analysis we were neither advocates nor opponents of the Space Shuttle System. We did take throughout the analysis a very critical attitude. The results now indicate that the Space Shuttle System is in the economic interest of the United States. We do not expect this conclusion to change given the present Space Shuttle System configuration.

Most sincerely yours,

KLAUS P. HEISS,
*Director, Advanced Technology Economics.*

OSKAR MORGENSTERN,
*Chairman.*

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COMMENTS ON STATEMENTS BY BRIAN O'LEARY AND BY THOMAS GOLD

Both the statements by O'Leary and by Gold presented to the United States Senate Committee on Aeronautical and Space Sciences in April, 1972 do not object to the analytical approach used by Mathematica, though they seem to suggest that the data provided to Mathematica may have considerable margin of errors. In fact, the major argument of O'Leary is that "a balanced presentation . . . on the costs and benefits of the Shuttle cannot be accomplished without some degree of effort outside NASA and its contractors. Such effort is now almost missing and is badly needed before a national decision can be made," (the only paragraph that is underlined in the original statement). Gold is skeptical about the ability to predict the future requirements and technological development. But can we make the decisions only when the uncertainty is negligible? In the following paragraph, I shall try to comment on the two statements separately.

O'Leary discussed a wide range of issues, some of them being outside the scope of the assignment to Mathematica. The major task of Mathematica was to answer the questions such as given a fixed requirement of space transportation *capability* or fixed level of *budget* for space transportation, would it be more economical to develop a Space Shuttle System instead of relying on the currently existing system.

The question of national priority and NASA priority should affect Mathematica's economic analysis only if the nation or NASA is expected to carry out an entirely different space program which would require much less capability or budget for *any* space transportation system.

In considering Shuttle launch costs, O'Leary raised a question: Why invest more than $7.5 billion into a system whose launch costs might turn out to be greater, both total and per pound, than existing systems? One should answer this question only by asking another one: Why not, if the total space program costs can be reduced? In fact, Mathematica stated explicitly that total launch costs for the Space Shuttle System is not likely to be lower than that of the current expendable system.

On Shuttle payload costs, O'Leary suggests that "the point of obsolescence is reached before the need for refurbishment." Therefore, no cost saving may be expected from any refurbishment. Whether payload maintenance or refurbishment is obsolete or not cannot be answered without knowing both the goals or missions and the level of technology. To the extent that the mission model may not be realistic or the cost estimation may not properly account for technological development, O'Leary's argument may be valid. In practice, to overcome these uncertainties, sensitivity analysis has usually been performed by varying the mission models and the cost estimates.

Regarding the role of the Department of Defense, O'Leary asks the question: Should the Air Force not add their contribution to Shuttle investment? The question may be relevant only when different funding practices or pricing policies may affect the capability requirements or budget constraints for space transportation considerably. The task of Mathematica was made simpler by explicitly stating a given level of capability or budget for space transportation, regardless of whether the fund is provided to NASA or the Department of Defense or the Air Force in particular.

Finally, in the so-called secondary costs category, O'Leary mentions environmental consideration and NASA's credibility or reputation et al. He also suggests that the Shuttle is coupled to a space station. "Otherwise what else is to be done when you get there?" Whether this is true should be considered by examining the proposed mission models and evaluating their reliability as a realistic program to be carried out in the future. One may note that in the past the space program actually required considerable space transportation capability (or budget) without any space station?

Turning to the statement by Gold, we found that he is much more concerned with the allocation of a given NASA fund. He seems to suggest that the limited fund that is available to NASA should be spent on communication engineering or telephone and data transmission systems, et. al., which presumably would not require a large capability or budget for *any* space transportation system, whether it be Space Shuttle or not.

Gold suggests that the Space Shuttle System could involve major technical problems and indicates that "In these circumstances detailed economic studies have no great value and tend to deflect attention from the major problems and uncertainties." (This view appears to be contrary to O'Leary's statement). After expressing his own doubt about the economic advantage of the Space Shuttle, Gold mentions several points that must be taken into account in addition to those mentioned in the recent Mathematica report. Among these, he suggests that the future missions may require more synchronous orbit flights rather than low orbit flights and this would reduce the attractiveness of the Space Shuttle which uses the Tug to transfer from a low to a high orbit. The mission models may be modified, if necessary, to take care of this consideration. But in view of the results of many sensitive analyses that have been performed, it appears unlikely that this consideration alone would alter the major conclusion of Mathematica.

Gold also suggests that the nature of payloads particularly their weight may be drastically reduced so that our present day ideas of payload requirements may appear quite outlandish in the future. We must admit that there is substantial uncertainties involved not only in the estimation of payload costs, but also in other costs as well. This has been taken into consideration again by performing sensitivity analyses.

Finally, Gold points out that the Space Shuttle may not be expected to perform all the Department of Defense's space flights. Mathematica has evaluated many mission models (scenarios) which involve only very limited participation of the Department of Defense. Therefore, whether it would be necessary to maintain other capability for the Department of Defense should not affect the major conclusion of Mathematica's economic analysis, unless such other capability would become very costly as a result of the Space Shuttle development.

DR. KAN YOUNG.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION,
*Washington, D.C., April 26, 1972.*

Hon. CLINTON P. ANDERSON,
*Chairman, Committee on Aeronautical and Space Sciences, U.S. Senate, Washington, D.C.*

DEAR MR. CHAIRMAN: As requested in your letter of April 18, 1972, I am enclosing some NASA comments on the statements on the space shuttle filed with the Committee by Dr. Thomas Gold and Dr. Brian O'Leary.

H. DALE GRUBB,
*Assistant Administrator for Legislative Affairs.*

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NASA COMMENTS ON STATEMENT BY DR. THOMAS GOLD TO THE COMMITTEE ON AERONAUTICAL AND SPACE SCIENCES, U.S. SENATE, APRIL 1972

Dr. Gold's statement addresses matters largely outside his experience and competence as a space scientist. As indicated in detailed testimony given the Committee, NASA, its contractors, and other groups have studied in depth the technical potential of the shuttle for future space missions (including space science and space applications), the cost of developing and using the shuttle, and the overall economics of a long-term future program using the shuttle compared to the best available alternatives. These studies, made by qualified experts in each field and reviewed by NASA management, by the Office of Management and Budget, and now by the responsible Committees of the Congress, supported the conclusion that the space shuttle program should proceed as recommended by NASA and the Administration. These studies are the basic answer to the contrary arguments and opinions expressed in Dr. Gold's statement.

As Dr. Gold states, the NASA organization does represent a major national asset of scientific, technological and managerial skills. The fact that the space shuttle will help retain much of this capability is an important consequence of the decision to proceed with its development. However, it is erroneous to state that the plan for the shuttle is simply the result of NASA's desire to avoid dissipation of the NASA organization.

The need for the space shuttle arose from the requirement to achieve the potential benefits of space more effectively. As NASA has repeatedly stated, although the shuttle will indeed be an excellent economic investment, it is not economics that provide the basic justification. The fundamental reason for developing the space shuttle is to provide routine, timely access to space for the wide variety of scientific, earth applications, commercial and defense payloads that will be flown in the 1980's and beyond.

Congressman Karth, who for many years has been a strong advocate for space science and applications satellites, has recently put this in proper perspective when he said, ". . . if we're going to have any space program at all, we've got to have the shuttle to continue it. And if we don't get the shuttle, frankly, I think there's going to be an end to the space program." That is the point of the entire shuttle program—it is needed because of the effective uses of space it will make possible.

Comments on each of the three major points made by Dr. Gold are given below:

1. Dr. Gold asks: *Should NASA embark now on a plan that occupies most of its strength for another round of long-range development work or should it concentrate more on doing the many things in useful applications and in science which the previous round of development work have made possible?*

By "the previous round of development work," Dr. Gold presumably means the highly successful Apollo program, and the successful space science and applications programs of the 1960's. As he points out, these programs laid the foundation for a vast array of useful future advances in space science and space applications. However, whether it is in the first, second, or third round of development, each program must be justified on its own merits. It is the potential future utilization of the shuttle in space science and civil and military applications which justify its development.

The applications areas which Dr. Gold cites—commnuications, education, and meterology as well as many more—are the very ones for which the shuttle is needed to make it most effective. Lower launch costs, and more reliable satellite placement prevention of malfunction or failure, and refurbishment and reuse are examples of ways in which the space shuttle will make space applications more effective.

With the shuttle, scientists will finally be able to work in a mode which more closely resembles the way they work in the laboratory. Dr. John Naugle, who has had long and broad experience with all aspects of space science, has listed the advantages of the space shuttle for space science as follows:

"1. Low cost transportation to earth orbit;

"2. Operation, maintenance, and modification of more or less permanent orbital facilities, such as an astronomical observatory;

"3. Short-term 'sortie' missions to checkout new prototype experiments or conduct experiments which can be accomplished in a relatively short period of time; and

"4. Much shorter time between the conception and completion of an experiment, thereby accelerating our research in space.

"While we expect the shuttle to help our program in these specific ways, what really intrigues us are the potentialities which our present insight cannot accurately or fully predict."

Dr. Gold says that NASA is planning for tomorrow and neglecting present benefits. This is not true. NASA is not standing idle waiting for the shuttle. The technology of the 1960's is being applied now to the immediate future. Concurrent with development of the shuttle NASA will maintain and use a reliable and effective stable of launch vehicles for automated spacecraft for the next several years. At the same time, the Office of Space Sciences is shaping studies and design work on specific projects such as the Orbiting Solar Observatory (OSO), the High Energy Astronomy Observatory (HEAO), and the Large Space Telescope (LST), so that these projects can begin to take advantage of the shuttle as soon as it becomes operational.

2. Dr. Gold asks: *Is the plan for the shuttle technologically sound and are the favorable economic estimates realistic?*

Over two years of focused space shuttle technology studies, experimental testing and evaluation have verified that the current state of technology will support development of the shuttle under the present conservative development schedule. Technical studies are continuing in many areas such as aerodynamic effects, avionics, and high temperature materials for shuttle applications. Further innovation is still desirable, especially to reduce development and operational costs even further, if possible, but the fundamental technology required now exists and no breakthroughs are necessary.

The most detailed economic analysis of future space utilization has been the Mathematica study. This study probably was the most comprehensive and detailed economic study of a major development program in the history of the United States. The Mathemaica report concludes that the space shuttle will save about $13 billion for a conservative 12-year mission model over using expendable launch vehicles. This conclusion takes account of improvements possible in expendable launch vehicles and the cost of the space tug for the shuttle system. Detailed review of the Mathematica study will show that it takes account of each of the arguments and factors cited by Dr. Gold and other critics as objections to the space shuttle.

For example, Dr. Gold asserts that only a large continuous manned earth orbital program would justify the development costs of the shuttle and that it cannot be justified for applications purposes and science. The Mathematica study clearly shows that such conclusions are unwarranted. Dr. Gold's remarks about a Mars expedition are irrelevant. The shuttle could, of course, provide a way station for deep space exploration but that is not in any way the reason or justification for developing it.

Dr. Gold's discussion of the possible economies of mass producing expendable boosters is not valid. Aerospace Corporation, which has had extensive experience with both launch vehicles and payloads, has studied in depth both the payload and economic effects of continued expendable launch vehicle production. In this study, production rate effects were fully considered and the study concluded that the shuttle still showed substantial economic advantages. With respect to payloads, notwithstanding Dr. Gold's views to the contrary, detailed engineering studies have shown the economies and other advantages possible through relaxation of the size and weight constraints imposed by current launch vehicles. With the space shuttle, the configuration of satellites can be established by considerations of component access, ease of fabrication, and simplicity of testing rather than by the need to crowd miniaturized equipment into the nose cone of an expendable launch system.

3. Dr. Gold asks: *Do we understand enough of the requirements and the technological developments now to predict the utility of a system 15 or 20 years ahead?*

Dr. Gold's comment that the military space program could not be dependent upon the shuttle and that they will require expendable boosters has been adequately answered by the February 24, 1972, letter to Dr. Fletcher from Dr. John S. Foster, Jr., Director of DDR & E for DoD, which has previously been provided for the Committee record. In this letter, Dr. Foster listed the many shuttle capabilities desired by DoD and concluded by saying, ". . . if the space shuttle system is developed with acceptable operational and cost advantages, it could replace essentially all of our current stable of expendable boosters."

Dr. Gold's criticism that the shuttle will be flying in the 1980's with technology developed for it during the 1970's is not valid. The future use of present technology is an unavoidable fact of life for large systems development whether it be a dam, a bridge, or a space transportation system, because of the lead times necessary. However, there are areas in the shuttle where future technological improvements can be implemented if desired. For example, improved avionics systems could be installed in operational shuttles if economy and operation would benefit therefrom.

In summary, Dr. Gold's statement on the space shuttle makes no new points. All of the points he makes have been considered in their full and proper context in the NASA studies and decision process leading to the conclusion that the space shuttle should proceed as has been recommended.

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NASA COMMENTS ON STATEMENT OF DR. BRIAN O'LEARY TO THE COMMITTEE ON AERONAUTICAL AND SPACE SCIENCES, U.S. SENATE, APRIL 1972

Dr. O'Leary's statement consists almost entirely of opinions and conclusions outside his sphere of professional competence. The points he addresses have been dealt with critically and in depth by qualified experts in the studies and reviews that led to the decision by NASA and the Administration to proceed with the space shuttle.

Since Dr. O'Leary's specific points have been dealt with at length in testimony and studies previously presented to the Committee, this statement will address only his main point, which is a challenge to the integrity of NASA, its contractors, the Office of Management and Budget, and all who have reviewed and favorably evaluated the space shuttle program as now proposed. Dr. O'Leary says that the space shuttle program should not proceed until "a balanced presentation to decision-makers of technical information bearing on costs and benefits of the shuttle" is made and that "such an effort is impossible as long as those making the evaluation are beholden to NASA and the Department of Defense for their livelihoods." Three comments will suffice:

1. The present shuttle program has evolved in the free and open, critical, "give-and-take" type of discussion that characterizes innovative technical studies involving literally thousands of engineers and other professional specialists. In guiding and reviewing these studies, NASA has not suppressed or ignored dissenting views. Such views have been considered at the appropriate stages in the decision process and have helped shape the program in its present form. The changes in the program during the past two years, for which Dr. O'Leary criticizes NASA as representing a "fluctuating rationale", in fact represent NASA's response to independent views it has sought and encouraged both within NASA and from outside groups.

2. The space shuttle program as now presented was given a most critical independent review by the Office of Management and Budget and other elements of the Executive Office. These offices and their advisors are in no way "beholden" to NASA or the DOD.

3. The principal study in depth of the economics of the space shuttle program was by Mathematica, Inc. This study was commissioned by NASA as an independent study and appraisal of the economic worth of the space shuttle's concept. Dr. Morgenstern has testified directly to the Committee that Mathematica was given full independence and freedom to criticize in the conduct of this study. The study reports stand on their own feet as classic examples of penetrating, detailed analysis of a very complex program.

The record clearly shows that the merits of the space shuttle program have been studied and reviewed in depth by qualified experts within and outside the Government. The detailed points raised by Dr. O'Leary have repeatedly been answered again and again. His statement provides no valid reasons for not proceeding with the space shuttle as recommended.

Mr. TUNNEY. Mr. President, I rise in support of the space shuttle program, which is the most significant part of the NASA authorization before the Senate today. I support it because I believe in the need for a continuing, meaningful space program, including both manned and unmanned missions, and such a program would be impossible in a practical sense without the space shuttle.

I support the space shuttle because it transfers energy and dollars into a project which has long-term significance and it represents a good long-term investment into new and advanced space technology with resultant "spin-off" benefits to our domestic problems.

At a time when the United States must readjust its priorities toward domestic ills, the space shuttle program would allow the continuation of an advanced technology space program at a cost which is reasonable.

We are all aware that the space program has lost much of its "glamor." After the initial excitement of seeing men in space, after the stunningly successful Mercury, Gemini, and Apollo manned space programs and the less spectacular, but equally successful unmanned flights, a mood of boredom seems present. We must now recognize the reality of the situation. The diminished public interest in space means that NASA's budget must be leveled out. From now on, the Space Agency will have to fight for its budgets like any other Government agency. Every dollar it spends will be subject to intensive scrutiny. Both within the executive branch and here in Congress. And, like other agencies, NASA will find that it must get by with budgetary levels which will be lower than it would like to have. And yet, the need for a meaningful space program is more vital than ever before. So it becomes increasingly necessary that the space program take whatever steps it can to assure that dollars spent in space will achieve the maximum possible return. The space shuttle, by achieving important economies in our future space operations, therefore becomes vital to the future of the space program, hence to our future as a nation, as well.

Let me briefly describe what the shuttle system is like and how it will operate. Each shuttle is composed of an orbiter and a booster, with the orbiter mounted piggyback on the booster. After launch from a vertical position, the booster will drop away at low altitude, while the orbiter goes into space circling the earth. The orbiter is the new vehicle and is the heart of the system. It carries the payload into space and has the capability to return to earth, maneuver in the atmosphere, and land like an aircraft. The orbiter is to be designed for 100 flights, with a maximum of 2 weeks layover for maintenance after every flight. The booster, which is a solid-fueled rocket, will parachute into the ocean. It is designed to be reused some 10 to 15 times.

The sites from which the space shuttle will operate have been chosen. The initial launch and landing site will be at the Kennedy Space Center in Florida. This site will be used for research and development launchings beginning in 1978 and for all operational flights launched into easterly orbits.

A second operational site at Vandenberg Air Force Base in California will be used for shuttle flights requiring high inclination polar orbits.

I have said that the shuttle would produce significant economic savings in our space program. Let me begin with one dramatic example of a situation where the shuttle would have prevented a huge waste of money—the case of the Orbiting Astronomical Observatory, or OAO. When the first of these large and complex satellites was launched, the payload went dead because of a malfunctioning battery charger. This problem could have been solved by returning the payload to earth or repairing it in orbit had the shuttle been available. Instead it was a total loss of $80 million. Another OAO was rendered useless because a release mechanism failed to function properly and another $80 million was lost. If the shuttle had been used this failure, too, could have been prevented.

This is only one example of the potential advantages the space shuttle provides. There are many others, including a number of completely new capabilities. The more important benefits we derive from the shuttle fall into four broad categories:

First, the shuttle will greatly increase the usefulness of unmanned satellites by permitting their recovery and repair. The OAO example which I have just used is only one illustration. Many times a highly expensive scientific payload is rendered useless because of a relatively minor malfunction. The space shuttle would make these satellites accessible. The shuttle crew would match orbits with the malfunctioning satellite, pull up alongside, inspect the satellite, and repair it on the spot if possible. If the repair was beyond the capability of the shuttle crew, they could "take it back to the shop"; that is, bring it back to earth for more extensive refurbishment. The repaired satellite would then be placed back into orbit by means of another space shuttle flight. The economic advantages of this method of repairing satellites, as compared to the situation today where our only option is to launch a totally new device, are obvious.

Second, the shuttle would afford the opportunity for considerable savings in the design of unmanned satellites, since size, shape, and weight restrictions on these satellites would no longer be so severe. The aerospace industry has performed a remarkable job over the years in miniaturization of space hardware; without these efforts, we would not have a space program at all. But miniaturization exacts a price—in cost, in reliability, in the capability for doing the job. For example, there are physical limitations as to how much an optical system can be folded, or how light and small a movable set of optical filters can become. Often a slightly larger battery, or a few more feet of tape, might add significantly to the useful life of the satellite—but it is impossible to squeeze in those extra few ounces that would be so vital. The space shuttle promises designers relief from the tyranny of severe size and weight restrictions under which they now labor.

Third, the manned space program will become much more useful and productive with the shuttle. Here I would like to correct an erroneous impression that seems to be abroad, to the effect that the only reason for the shuttle is to keep the manned space program going. Nothing could be further from the truth. The examples I have just given as to how the shuttle would benefit our unmanned program illustrate this. In fact, the advantages to the unmanned program alone easily justify the shuttle. But it is true that, without the shuttle, the manned space program would be sharply limited—indeed so limited that it might have to close down. Putting a man into orbit by using an expendable booster rocket is a terribly costly proposition. The cost of each Apollo mission was roughly $450 million, or $150 million for each man in the capsule. A man is an expensive mechanism to send into space, under current weight restrictions. In addition to the weight of the man himself, we must include the weight of the life support

systems necessary to keep him alive—oxygen, food, water, and all the rest. And yet, after the experience of the Apollo program, who can doubt the usefulness and versatility of man in space? The space shuttle would increase that usefulness, by diminishing the weight and cost penalties involved. It would also make it possible to send into space individuals who have not had astronaut training, since the shuttle will be roomy enough to allow for nonastronaut "passengers"—perhaps highly trained scientists, perhaps even poets or artists. Space would no longer be limited to a few specialists—it would be open and this openness would result in vast intangible benefits for mankind, as well as the tangible benefits already enumerated.

Fourth, and finally, there are the possibilities on the far horizon—the speculative projects that we cannot plan for today with any degree of certainty. These include ideas like a permanent orbiting space station, or manned flight to Mars, or a lunar colony, or a giant space power station using solar cells which could beam its power down to earth using microwaves. We have no way of knowing now how practical or worthwhile any of these projects might be, and they are not part of the formal NASA justification for the shuttle. But this we do know—without the space shuttle, the door will be closed on any such large-scale projects, and thus closed to the benefits these projects hold for mankind.

I have not attempted to go into the detailed studies that have been performed on the economic justification for the space shuttle. The distinguished members of the Committee on Aeronautical and Space Sciences are in a better position to discuss these details that I am. But I will point out that these studies do exist, and that they were performed by a group of the world's most respected economists. They compared the cost of our space program during the 1980's with the space shuttle against the cost of the same program without the shuttle. The net result was a savings of $7 billion by using the space shuttle system, even when the costs of designing and developing that system are taken into account, as of course they should be.

Mr. President, I have saved perhaps the most difficult question for last—the question that really underlies the debate over the space shuttle. The question is: Why continue our space program at all? Have we not already learned as much as we can from space—and do we not have pressing needs closer to home that should take priority over missions to outer space? And my answer is that we must continue the space program and at the same time we must solve our domestic problems. No one is more aware than I am of the urgent needs confronting our society—of the problems of poverty, hunger, pollution, decaying cities, clogged transportation networks, and all the rest. I am dedicated to solving these problems.

In fact, the space program has resulted in many tangible benefits or "spinoffs." These benefits have come in such areas as communications, weather forecasting, business and industry, agriculture, management, medicine, education, aeronautics, and environmental protection.

The original Space Act states that "activities in space should be devoted to peaceful purposes for the benefit of all mankind."

In continuing our space program we must keep this goal in mind and we must utilize the knowledge which we gain from space exploration to help us solve our problems here on earth, the space shuttle in fact allows us to do just that. It is a reasonable compromise which allows for the continuation of the space program but at a much lower budgetary priority level.

We must also not lose sight of the long-range national interest. And it is in our national interest to remain one of the world's leaders in science and technology. If we cannot remain competitive in high-technology industries, if we allow the other industrial nations of the world to pass us by, we will soon find that we cannot compete on the world's markets—and then we will have great difficulty generating the revenue needed to pay for our domestic programs. Our balance of trade figures provide some ominous indications that we are already in trouble—that we are losing the advantage of world leadership that we have enjoyed for so many years. We must reverse this trend—and in order to do that, we must keep our technological base.

The space program is one of the most essential elements of that base—and the space program cannot effectively be continued through the 1980's without the space shuttle. Mr. President, we must look to the future as well as the present. In the interest of the future which we all desire for our Nation, I urge the approval of the space shuttle.

In the words of Dr. Bruce Murray of the California Institute of Technology,

> We should explore the planets because it permits us as a people to create an enduring legacy for future generations; because it is a scientific field of great significance and timeliness; and because our citizens generally regard it as a desirable national activity, if kept within reasonable costs.

Mr. BROOKE. Mr. President, I support the committee's recommendation of $227.9 million for continued funding of the space shuttle program. This money will enable NASA to continue the orderly development of the principal components of the shuttle.

The shuttle represents a new concept in space exploration. Because it is reusable, it considerably reduces the time and the unit cost for transporting spacecraft into orbit. As such, I believe that it represents a significant technological improvement over the single-shot booster program which has characterized the American space program thus far.

Equally as important, the shuttle will expand the scientific opportunities of the space program. The farflung innovations that the program has fostered in such areas as medicine, communications, and the environment can be continued on a larger and more intensive scale because of the increased capability and utility of the shuttle. For example, it is expected that the shuttle will be able to carry biologists and physicists, in addition to the present corps of highly skilled pilots, who will be able to conduct more sophisticated experimentation in space.

Although we cannot state categorically at this time what will be the nature of each of these research efforts, I am confident that the NASA projects will result in benefits for all mankind for outweighing the initial cost of the program. Moreover, it has been pointed out that the use of space is becoming an economic necessity for a technologically advanced nation.

The fact is that we have grown to rely on such space-operated services as improved weather forecasting, a tenfold increase in capacity for transoceanic telephone conversations, and the photographic techniques which contribute to a more efficient means of land use and development, as well as product yield. And these projects represent only the tip of the iceberg. We would be resisting the inexorable flow of progress if we were to handicap the efficient continuation of these programs at a reasonable cost.

Furthermore, as the Apollo program reaches its completion this year, I believe that we should strive to keep together the highly talented community of scientists and engineers which NASA has built during the past decade.

Our Nation can and should continue to support a space program that represents slightly more than 1 percent of our total Government expenditures. Let us not forget, also, that the space budget for 1973 and for the foreseeable future represents a nearly 50 percent reduction in the amount of money spent by NASA in 1966.

Because the space shuttle will permit our country to continue the great scientific adventures which we have only just begun, and because it can be financed within the confines of the present space budget, I believe that the Senate should give the program its continued support.

Mr. STENNIS. Mr. President, during the debate on the shuttle during the past few months there have been statements made regarding the requirements of the DOD for the space shuttle.

Mr. President, if it would help the Senate to understand the need for the space shuttle program let me state emphatically that I am convinced that the DOD has a requirement for and does support the development of the NASA space shuttle program.

Testimony on this matter from Dr. John Foster, Jr., Director of Defense Research and Engineering and Dr. Robert Seamans, Secretary of the Air Force in March of this year before the Senate Space Committee bears this out. In fact, these two distinguished representatives of the Department of Defense have consistently supported this development program. Let me quote a few passages from Dr. Foster's testimony. He said:

> 1. The Department of Defense is becoming increasingly dependent on space systems, . . .
>
> 2. The Department of Defense supports the NASA Space Shuttle as an important part of the President's program which will lead to a greater and more effective use of the space environment in the future.
>
> 3. The DOD recommends that the Congress support the Shuttle. . . .

Secretary Seamans made similar statements, all of which unqualifiedly support the space shuttle.

However, I have heard the criticism that if the military requires this shuttle, then this need ought to be supported by DOD funding it. This is not a logical argument if one understands this project and the management of such systems. Over the years the Senate Space Committee has encouraged NASA and the DOD to work closely together on launch vehicle programs and this is happening. The committee's prodding is bearing fruit now with NASA scheduling the use of the Air Force Titan 3–C and 3–D launch vehicles for certain missions. It is simply more efficient and more economical for one agency to assume responsibility for the management and funding of this type of development program. This eliminates duplication. With respect to this Dr. Foster, in testimony before the committee, stated:

> My personal view is that we are on the right course, that one agency has to be in charge and, as such, should be the one that prepares the overall program, coordinates with other agencies, and then prepares and defends the case put before the Congress.

Dr. Foster continues:

> The alternative approach in which two different agencies present the program would, I think, make it more difficult for Congress, because the committees involved would then be increased severalfold. Moreover, the responsibility for operating the program would be split; and I think that would unnecessarily increase the number of people involved in the direction of the program at the top.

Moreover, a most knowledgeable observer, Dr. Courtland Perkins, an esteemed aeronautical engineer from Princeton University, who in the past has served as an Assistant Secretary of the Air Force, testified before the Space Committee that in his judgment NASA was the proper agency to undertake this development. Therefore, it seems to me that there is unanimous agreement among those who have studied this matter and who know and understand the management of these large complex systems. Funding for this development is properly assigned within the executive branch, and, the fact that NASA is providing all the funding for the development program is completely irrelevant and is in no way related to the fact that the Department of Defense supports this program and will utilize this space transportation system when it becomes available.

Mr. President, I believe the NASA space shuttle program is a program important not only to the NASA space program but is a program important to the national defense. I believe it is proper that the shuttle development be managed by NASA. I think departments and agencies of the Federal Government other than the Department of Defense have a role to play in the national security.

I am glad to see some of these burdens of development shifted from the Department of Defense.

I wish to commend Dr. James C. Fletcher, administrator of NASA, for the fine work and his reductions in the costs of the space shuttle; and his fine grasp of the problems of NASA and its administrations.

Mr. President, I urge the Senate to support the development of the space shuttle and vote down the Mondale amendment.

### SPACE SCIENCE BOARD'S 1970 REPORT

Mr. CANNON. Mr. President, in connection with the debate over the space shuttle a good deal of attention has been directed both last year and this at the reputed position of the Space Science Board of the National Academy of Sciences. It is alleged that this scientific body has said that there is no economic justification for developing the shuttle or that the National Academy itself has said that "no convincing case has been made for the scientific utility for the shuttle."

I wonder if any of the critics of the shuttle have actually read the report of the Space Science Board, or have any idea of what this report was supposed to be about.

In the first place, the document is a report on "A Study on Priorities in Space Science and Earth Observations" which was convened at Woods Hole, Mass., from July 27 to August 15, 1970. Its short title is "Priorities for Space Research 1971–80." As is indicated by the title, and I am reading from the preface:

> The Study seeks to determine criteria for relative priorities and recommends levels of effort and support to be allocated to NASA programs in planetary exploration, lunar exploration, astronomy, gravitational and solar-terrestrial physics, the environmental science portion of space applications, and the life sciences, during the period 1971–1980, based on likely contributions to basic knowledge and social benefit and on estimated total funding to be available.
>
> Some 90 scientists, including consultants from abroad, were involved during the Study.

The chapter headings parallel the subject matter I just read. You will notice that there is no chapter heading for space transportation systems, space shuttle, boosters, or any other such engineering subject because this was not the purpose of this summer study.

Toward the end of the first chapter entitled "Introduction and Summary" there is this brief paragraph on page 17:

> The absence of recommendations concerning the shuttle and space station should also be noted. These were considered as vehicles for the support of science, but we found the concepts too vaguely defined with respect to costs and engineering difficulties to permit any realistic assessment of the potential values to scientific research and applications. Nor was the Study able to evaluate the economics of the shuttle, because it depends so strongly on the volume of space traffic, which in turn is dependent upon many user activities besides those included in the present frame of reference. It is clear that space science and applications by themselves are insufficient to justify the cost of developing the shuttle.

Now, keeping in mind that this report was written nearly 2 years ago, when the initial studies on the shuttle had barely begun, let us try to see just what that paragraph says in plain English.

The first sentence states clearly that the report contains no recommendation about the space station or the shuttle. Let me repeat, there is no recommendation concerning the shuttle.

The second sentence says why no recommendation was made. Because the concept was too vaguely defined to permit any realistic assessment. That statement may have been true 2 years ago, but it is not true today.

The third sentence says that no evaluation of the economics of the shuttle was made because, as they stated correctly, this is dependent so strongly on the volume of space traffic, which in turn is dependent on many user activities besides those included in their study.

Now, the fourth and last sentence, and this is the only one that has been so frequently quoted and widely misinterpreted:

> It is clear that space science and applications by themselves are insufficient to justify the cost of developing the shuttle.

Well, that statement may be true, but the opponents simply slough over the phrase "by themselves," ignore completely the previous statement concerning many users, and jump to the totally erroneous conclusion that the Space Science Board is against the shuttle or that the National Academy of Sciences "has expressed skepticism about the shuttle."

The real fact is that no one has ever suggested that we must justify the shuttle economically by flying only a fraction of the available payloads. In fact, the precise opposite is true. The shuttle is economically viable only if it flies virtually all of our space traffic and that is exactly what it is designed to do.

And so, Mr. President, let us put to rest, once and for all, the contention that the Nation's most prestigious scientific body has said that the shuttle cannot be economically justified. It just is not true.

### SPACE PROGRAM TECHNOLOGICAL ADVANCEMENT

Mr. President, I think the record is clear that this Nation has established a preeminent position in space activities after getting a late start when compared with our principal competition. Not only has this program produced scientific breakthroughs and superb demonstrations of our technological competence as exhibited in the five successful lunar landing missions, but, and perhaps more important although much less obvious, is the focus which our space program has provided to solve problems which, in so doing, has broadened and greatly extended the technological base of our country.

There may be an occasional detractor, but I do not think we have to look far to observe that technology has been the basis for our present standard of living, the generator of our wealth, and the technological dominance of the Nation in world markets. One example is the computer industry which was stimulated almost beyond comprehension by the demands of our space activity. Our computer technology is envied by other advanced nations in the world today.

I fully believe that the space shuttle development will provide another focal point and a genuine technical challenge which will again cause us to advance the state of the art in many areas of technol-

ogy and thereby continue to maintain the technological leadership which is so important to the continued success and growth of this Nation. I cite respected authorities on this point. Dr. Courtland Perkins, on April 14, testified before the Space Committee with respect to the space shuttle as follows:

It will be one of only a few new national programs that will continue to permit growth and stretch in the various fields of high technology.

I also note a similar statement by Dr. John S. Foster, a nuclear physicist and currently the Director of Defense Research and Engineering.

The shuttle will advance the Nation's technological capabilities. The improved technology in areas such as stability and control, avionics, heat-protection materials, lightweight structures, fatigue and fracture mechanics, and aerodynamic shock and flow problems associated with large vehicles will certainly benefit new generations of military aircraft and spacecraft.

Mr. President, Dr. Foster alludes to the importance of shuttle technology in new generations of aircraft. I think it is clear that as we pursue the disciplines of space and aeronautics that we find these drawing closer together and that there are technical transfusions between the two fields. Therefore, we can expect usable fallout from the shuttle development program to benefit our aircraft programs and one should not have to be reminded that today American-made airplanes dominate the air routes of the world. We must maintain this leadership.

My attention was called a few days ago to an article inserted in the CONGRESSIONAL RECORD on May 9 by the ranking minority member of the Space Committee, Senator CURTIS, that as a result of our tremendous advancements in electronic components and circuitry developed in response to needs of our space program, with its heavy reliance on electronics, that an American company today is selling solid-state circuits to the Swiss watchmaking industry. It is my understanding that these circuits, replacing all movements in present watches, will produce timepieces of unequaled accuracy and that with advancements in production processes such watches may well be available at a price of $50 in 3 or 4 years. Not only that, but there is some reason to believe that our electronic circuit technology for timekeeping may be marketed by some of our own firms and that we might even be successful in transferring a large portion of the watch manufacturing industry back to the United States, an industry which has almost completely departed from this country. This may be considered to be a small matter, but as I look around me, I note that the wrist watch is a pretty prevalent article and I suggest there is a substantial market for this device.

Mr. President, I believe this illustrates that when we have projects that stretch our technology, there is fallout which does have other applications and does stimulate new business and in some cases, may even well stimulate a new industry.

Mr. THURMOND. Mr. President, I wish to express my strong opposition to the proposed amendment which would eliminate funding for the space shuttle.

I really cannot understand why anyone would urge the Senate to kill this most promising program. The space shuttle, quite simply, is the key to our future in space. With it we will be able to do more in space, better, and at lower cost. Without it, we would be abandoning the new frontier of space to other nations.

In considering the many reasons why this Nation should develop the space shuttle, we should not overlook its important military applications.

Mr. President, the Department of Defense has worked closely with NASA on requirements for the space shuttle in order to assure that the shuttle will meet military requirements as well as those of NASA, Comsat, and other civilian users. This work is the responsibility of a top-level Space Transportation Committee, cochaired by Mr. Grant Hansen, Assistant Secretary of the Air Force for Research and Development, and Mr. Dale Myers, Associate Administrator of NASA for Manned Space Flight.

There are a number of reasons why the Department of Defense is interested in the shuttle for future military space operations. First, the shuttle will provide new operating capabilities heretofore not available to DOD for military space missions. The shuttle will be able to deliver military payloads to space in a protective environment; and in addition, selected payloads may be retrieved in space and returned to earth for adjustment, modifications, or repair, so that the payload may be reused in space. Today, we do not plan the reuse of spacecraft because it is impractical to design and build them to withstand the severe reentry environment; but with the shuttle this problem would be avoided, since the shuttle itself would provide the protective environment. In addition, we could resupply payloads in orbit, thereby extending their life. For example, we could replenish high pressure gases used for orienting the spacecraft in space.

Mr. President, important additional advantages can accrue from the retrieval capability of the shuttle in terms of reduced risk and reduced time for payload development. The shuttle's ample provisions for payload weight and volume combined with its benign environment will permit many simplifications in design and will avoid much costly miniaturization. Moreover, the shuttle can be used as a test-bed for on-orbit payload testing during development, thereby reducing the need for complex ground simulations. When the initial deployment discloses a deficiency the payload could be returned to earth for corrective action. The foregoing factors add up to less risk and reduced time for achieving a mature space system.

Our ability to respond to technological surprise is enhanced by the shuttle. We will collect data from space more rapidly and we will be able to respond more quickly with refurbished or newly developed payloads. As manned operations become more routine, through continued use of the shuttle, the use of man with military spacecraft will become practical from an operational and an economic standpoint.

A second reason why DOD is interested is the prospect of a substantial reduction in the cost of space operations. Although the shuttle may provide some savings in space transportation, we expect the principal cost benefits will accrue in the payload area, where we can take full advantage of the shuttle's new operating capabilities. Our present payloads are costly and sophisticated; they require a high degree of redundancy; they must operate unattended for years after surviving a severe launch environment. With the shuttle we can afford a more relaxed design policy. Under this policy, if a component should fail, it can be repaired. Through these and other means the shuttle will permit use of less sophisticated and less costly payloads than those we are launching today.

Mr. President, finally, the shuttle will advance our Nation's technological capabilities, because its development requires improved technology in such areas as heat-protective materials, lightweight structures, aerodynamics, stability, and control, avionics, and fatigue and fracture mechanics. Much of this new technology may transfer directly to future generations of military aircraft as well as to military spacecraft.

In summary, the space shuttle will lead to a more effective use of the space environment in support of military operations.

Mr. President, I am pleased to express my support for this challenging new program. Everything I have heard here today leads me to the conclusion that it would be a tragic mistake to turn away from this program and abandon our last frontier, the frontier of space.

The PRESIDING OFFICER (Mr. BOGGS). Do Senators yield back their time on this amendment?

Mr. CANNON. Mr. President, I yield back the remainder of my time.

Mr. MONDALE. Mr. President, I yield back the remainder of my time.

The PRESIDING OFFICER. All time on this amendment has been yielded back.

The question is on agreeing to the amendment of the Senator from Minnesota (Mr. MONDALE).

On this question the yeas and nays have been ordered, and the clerk will call the roll.

The assistant legislative clerk called the roll.

Mr. ROBERT C. BYRD. I announce that the Senator from Indiana (Mr. BAYH), the Senator from Mississippi (Mr. EASTLAND), the Senator from Georgia (Mr. GAMBRELL), the Senator from Alaska (Mr. GRAVEL), the Senator from Minnesota (Mr. HUMPHREY), the Senator from Arkansas (Mr. MCCLELLAN), the Senator from Wyoming (Mr. MCGEE), the Senator from South Dakota (Mr. MCGOVERN), and the Senator from New Mexico (Mr. MONTOYA) are necessarily absent.

On this vote, the Senator from South Dakota (Mr. MCGOVERN) is paired with the Senator from Mississippi (Mr. EASTLAND). If present and voting, the Senator from South Dakota would vote "yea"

and the Senator from Mississippi would vote "nay."

I further announce that, if present and voting, the Senator from Minnesota (Mr. HUMPHREY) and the Senator from Georgia (Mr. GAMBRELL), would each vote "nay."

Mr. GRIFFIN. I announce that the Senator from Vermont (Mr. AIKEN), the Senator from Oklahoma (Mr. BELLMON), the Senator from Tennessee (Mr. BROCK), the Senator from Wyoming (Mr. HANSEN), the Senator from Oregon (Mr. HATFIELD), the Senator from Alaska (Mr. STEVENS), and the Senator from Ohio (Mr. TAFT) are necessarily absent.

The Senator from Vermont (Mr. STAFFORD) is absent on official business.

The Senator from South Dakota (Mr. MUNDT) is absent because of illness.

If present and voting, the Senator from Vermont (Mr. AIKEN), the Senator from Oregon (Mr. HATFIELD), and the Senator from Alaska (Mr. STEVENS) would each vote "nay."

The result was announced—yeas 21, nays 61, as follows:

[No. 179 Leg.]

YEAS—21

| | | |
|---|---|---|
| Burdick | Hughes | Pastore |
| Byrd, Robert C. | Javits | Pell |
| Church | Kennedy | Proxmire |
| Eagleton | Mansfield | Randolph |
| Fulbright | Mondale | Roth |
| Harris | Muskie | Stevenson |
| Hart | Nelson | Williams |

NAYS—61

| | | |
|---|---|---|
| Allen | Dole | Miller |
| Allott | Dominick | Moss |
| Anderson | Ellender | Packwood |
| Baker | Ervin | Pearson |
| Beall | Fannin | Percy |
| Bennett | Fong | Ribicoff |
| Bentsen | Goldwater | Saxbe |
| Bible | Griffin | Schweiker |
| Boggs | Gurney | Scott |
| Brooke | Hartke | Smith |
| Buckley | Hollings | Sparkman |
| Byrd, Harry F., Jr. | Hruska | Spong |
| | Inouye | Stennis |
| Cannon | Jackson | Symington |
| Case | Jordan, N.C. | Talmadge |
| Chiles | Jordan, Idaho | Thurmond |
| Cook | Long | Tower |
| Cooper | Magnuson | Tunney |
| Cotton | Mathias | Weicker |
| Cranston | McIntyre | Young |
| Curtis | Metcalf | |

NOT VOTING—18

| | | |
|---|---|---|
| Aiken | Gravel | McGovern |
| Bayh | Hansen | Montoya |
| Bellmon | Hatfield | Mundt |
| Brock | Humphrey | Stafford |
| Eastland | McClellan | Stevens |
| Gambrell | McGee | Taft |

So Mr. MONDALE's amendment was rejected.

Mr. CANNON. Mr. President, I move to reconsider the vote by which the amendment was rejected.

Mr. SCOTT. I move to lay that motion on the table.

The motion to lay on the table was agreed to.

Mr. ROBERT C. BYRD. Mr. President, I ask unanimous consent to have printed in the RECORD a statement by the distinguished Senator from Georgia.

The PRESIDING OFFICER. Without objection, it is so ordered.

STATEMENT BY SENATOR GAMBRELL

As the Senate considers H.R. 14070, I want to comment on an amendment I offered in the Aeronautical and Space Sciences Committee which would have required NASA to conduct cost-benefit studies on all of its future projects.

Dr. Fletcher, the NASA Administrator, in a letter to the Committee, expressed his opposition to this amendment which the Committee rejected. Dr. Fletcher's letter stated that NASA generally shares my view of the desirability of cost-benefit analysis, but it concluded:

Nevertheless, in NASA's own programs, it is frequently the case that cost benefit analyses are not possible or relevant. Even in applications oriented programs like earth resources and aeronautics the essential purpose of NASA's efforts is to establish experimentally the technical feasibility of possible practical applications so that informed decisons can be made on whether an operational system would be cost effective. Thus, a principal aim of our work is to provide data for cost benefit studies, and therefore it is often simply not possible to perform a cost benefit analysis before NASA conducts its experimental programs.

Therefore, while NASA fully supports the principles of cost-effectiveness and has, in fact, applied them in a number of cost studies in its program planning and management, we do not believe the proposed Amendment in its present form would be in the best interests of the space program for the reasons discussed above.

In commenting on my amendment the committee report suggested that such a cost-benefit study would be difficult and inappropriate with respect to such projects as proposed astronomy or planetary science missions. Frankly, I can't understand what business we have supporting any space missions without a clear understanding of the benefit expected from the expenditure involved.

If NASA's mission is to use Dr. Fletcher's words, "to establish experimentally the technical feasibility of possible practical applications," then I am extremely alarmed about the size of their budget, even under present limitations. What this means to me is that NASA and its contractors are given a technological "playpen" full of toys, without any yardsticks by which to measure success or failure, or even to establish any priorities.

So long as we are overspending annually in the range of $20 to $40 billion, I am most concerned about any "experiment" which can run as high, in cost, as a Billion Dollars or more. Viewed in this light, Congressional judgment is limited to the question of how much money we can set aside for the technicians at NASA to play with. It was on such a basis that the SST collapsed.

I do not think the American people will put up with this very long, and our space program may suffer from a reaction on the part of the American taxpayer. It was to avoid this possibility that my amendment was proposed. I will continue my efforts to guarantee a thorough cost-benefit analysis of all our space endeavors as a member of the Aeronautical and Space Sciences Committee.

Mr. HOLLINGS. Mr. President, I was angered recently when a columnist ridiculed the space program and a South Carolinian who has made a real contribution to that program. Worse than the ridicule of NASA and astronaut Charlie Duke, was the columnist's cynicism. He described our men as "Two Klutzes on the Moon." I am afraid that kind of attitude erodes our national spirit.

Reading a letter-to-the-editor in reply to the column, I gave some thought to this word, "klutz," as applied by columnist Van Hoffman. And with the writer, Dr. William Duke—the astronaut's brother—I have decided that a klutz might simply be an American who is proud of his country's accomplishment and proud of the people who make those accomplishments possible. If that is what klutz means, then count me in the clan. In fact, on May 26, Lancaster is having Charlie Duke Day. I invite my colleagues. I will bet you will find there a whole convention of klutzes—and people who are proud of it. Because in South Carolina, we are not yet quite so jaded. We still feel emotion and show it—especially when that emotion is evoked by our country doing well and one of our own doing well.

I am entering in the RECORD Dr. Duke's letter. He speaks well for his family and for Lancaster. He speaks well for South Carolina, a State proud—but not so proud that she has forgotten how to show enthusiasm, excitement, and affection for her astronaut, Charlie Duke.

There being no objection, the article was ordered to be printed in the RECORD, as follows:

FROM AN ASTRONAUT'S BROTHER

The article by Nicholas von Hoffman, "Two Klutzes on the Moon," which appeared in the Washington Post, April 26, 1972, has come to my attention. I would like to make a few comments concerning Mr. von Hoffman's rather schizoid commentary. My viewpoint is no doubt biased, since I happen to be the twin brother of one of the "klutzes" on the moon.

I could find no listing of klutze in the dictionary. Obviously, quite a derogatory noun was used. My reaction to the activities on the lunar surface was that I was watching two enthusiastic, exuberant, excited, inquisitive men, performing a job as best they could, yet showing their natural human reactions and emotions.

Mr. von Hoffman's point about nobody remembering the second man to sail around the world after Magellan is correct, although most "klutzes" know that Magellan never made it around the world. He was killed by natives on an island in the Pacific, fully one year before Juan de Elcano (del Cano) sailed the last remaining ship into his home port.

My brother stated publicly that he would go to the moon anonymously. He sought no personal gain. No one will recall the names of these space explorers, but each time one mission is completed, the next is easier. I am sure the second, third, or one hundredth man to sail around the world found it easier than the one preceding. Who is to judge what is to be gained now or one hundred years hence in and from space?

I am envious that Mr. von Hoffman has such a direct line to God and informs us so well about God's refusal to live up to His treaty obligations with NASA. Too bad the United States Air Force Academy should be damned in the same paragraph, since neither of the "klutzes" on the moon graduated from that institution, an error difficult to explain for one who knows so much about what God would or would not do.

Perhaps most distressing is Mr. von Hoffman's belief, almost hope, that death would claim the two or three "klutzes," and put the space program back on the front page. All of our astronauts fly with this prospect in mind, but they go. Why, I wonder, for what reasons? Clue us in, Mr. von Hoffman.

I feel genuine sorrow for Mr. von Hoffman. He is obviously unhappy and disenchanted with his country, his earth, his heavens, his fellow humans, but most of all with himself. We would welcome a visit to Lancaster so that we could show him how a whole town of "klutzes" are enthusiastic, exuberant, and excited about our earth, our country, our heavens, and about life. I hope most Americans share this view.

WILLIAM W. DUKE, M.D., F.A.C.P.

The PRESIDING OFFICER. Pursuant to the previous order, the Chair recognizes the Senator from Montana.

Mr. MANSFIELD. Mr. President, I would prefer that the bill be disposed of, which I understand can be done immediately.

Mr. SCOTT. Mr. President, I am authorized by the distinguished Senator from Nebraska (Mr. CURTIS) to yield back time on this side, and I am prepared to move to the third reading of the bill.

Mr. CANNON. Mr. President, as far as I know there are no other amendments. I am prepared to yield back the remainder of the time on the bill and have a voice vote.

The PRESIDING OFFICER. All the time is yielded back.

If there be no further amendment to be proposed, the question is on agreeing to the committee amendment in the nature of a substitute, as amended.

The amendment as amended was agreed to.

The PRESIDING OFFICER. The question is on the engrossment of the committee amendment as amended and third reading of the bill.

The amendment was ordered to be engrossed, and the bill to be read a third time.

The bill was read a third time.

Mr. CANNON. Mr. President, I yield back the remainder of my time on the bill.

Mr. SCOTT. I yield back the remainder of our time on the bill.

The PRESIDING OFFICER. All time is yielded back.

Mr. DOMINICK. Mr. President, the yeas and nays.

Mr. MANSFIELD. Mr. President, I was under the impression there would be no rollcall vote. Therefore, I have held back since 2 p.m. I would hope that those asking for the yeas and nays would reconsider; otherwise, I would have to reconsider. I did get an order for this time to begin at 2 p.m.

The PRESIDING OFFICER. Is there a sufficient second for the yeas and nays? There is not a sufficient second.

The bill having been read the third time, the question is, Shall it pass?

The bill (H.R. 14070) was passed.

Mr. CANNON. I move to reconsider the vote by which the bill was passed.

Mr. SCOTT. I move to lay that motion on the table.

The motion to lay on the table was agreed to.

## ORDER OF BUSINESS

The PRESIDING OFFICER. Pursuant to the previous order the Chair recognizes the majority leader for a report.

Mr. ROBERT C. BYRD. Mr. President, may we have order in the Senate?

The PRESIDING OFFICER. The Senator is correct. We will not proceed until the Senate is in order. Senators and staff members will please be seated.

The Senator from Montana may proceed.

## JOURNEY TO THE NEW CHINA

Mr. MANSFIELD. Mr. President, when President Nixon returned from Peking last February, he transmitted an invitation from Premier Chou En-lai to the joint leadership of the Senate to visit the People's Republic of China. The invitation was accepted by Senator SCOTT and myself and between April 15 and May 7, we undertook the journey.

On Monday, last, I gave to the President a written report on what I had observed, heard, and discussed in China and conclusions which I had reached, as a result, particularly with regard to Indochina. I have requested this time, today, to provide a general account of the journey to the Senate.

I shall speak in some considerable detail because it seems to me that the long deprivation which has been experienced regarding direct information on China warrants a most thorough account. Moreover, since the President has chosen to take new military risks in Indochina, we had better get as clear a picture as we can of the contemporary nature of the immense nation whose southern borders are contiguous with that troubled and tragic region.

If I may, Mr. President, I shall now proceed to report on the journey to the new China, but before I begin I would like to express my gratitude to the distinguished minority leader, the Senator from Pennsylvania (Mr. SCOTT) and to Mrs. Scott and to the staff, but especially to Mr. and Mrs. SCOTT because of the assiduousness with which they applied their talents and abilities and to commend most especially the distinguished Republican leader who has a great cultural knowledge of China and an intense personal interest.

### I. INTRODUCTION

From arrival in Shanghai on April 18 until departure from Canton on May 3, the leadership was in China a total of 16 days. Five days were spent in Peking; two in the great industrial port of Shanghai on the eastern seacoast; two in the recreational lake-city of Hang Zhou—Hangchow—which is south of Shanghai; two in Xi An—Sian—which is a gateway to Mongolia, a source city of Chinese dynastic culture and, today, a major agricultural and industrial center of the northwest; 2 days in Chang Sha, in the south-central Province of Hu Nan where Mao Tse-tung began his revolutionary activities; and 2 days in Guang Zhou, formerly Canton, the commercial hub of South China and the site of China's International Trade Fair.

We had ample opportunity to move about in these cities and into the surrounding countryside. We talked to many people, to government and party officials, soldiers, medical and health specialists, scientists, teachers, farm managers, factory workers, and students. Our most important discussions were held in Peking, where we met for 8 hours of informal conversations with Premier Chou En-lai, and many more hours with the Vice Minister of Foreign Affairs, Ch'iao Kuan-hua, and other officials.

Host for the visit was the People's Institute of Foreign Affairs, which is a quasi-official arm of the Chinese Foreign Ministry. I was deeply impressed both by the kindness and efficiency of the staff of the institute who accompanied us on the entire journey and by the warmth of the reception we received everywhere in China. The hospitality shown to us by our hosts and the Chinese people was thoughtful and considerate. The friendliness was unmistakable.

I did not go to China with the expectation of becoming an instant expert on its government, its social structure, its economy, or its internal affairs. I went to see what I had seen a long time before—as a private in the Marines in the early twenties and, twice again, during and after World War II, as a representative of President Roosevelt and as a young Member of the House of Representatives. After an absence of a quarter of a century, I went to compare the old China with the new and to explore current attitudes of the People's Republic toward the United States.

It is difficult to look at China, today, free of the distortions of national disparities, especially after two decades of separation. But the distortions can be tempered by perspective. It is possible, for example, to judge a bottle as half full or as half empty. If China is measured by some of our common yardsticks, whether they be highway mileage, the number of cars, television sets, kitchen gadgets, political parties, or newspaper editors—the bottle will be seen as half empty. If China is viewed in the light of its own past, the bottle is half full and rapidly filling.

Today's China is highly organized and self-disciplined. It is a hard-working, early-to-bed, early-to-rise society. The Chinese people are well fed, adequately clothed and, from all outward signs, contented with a government in which Mao Tse-tung is a revered teacher and whose major leaders are, for the most part, old revolutionaries.

There has not been a major flood, pestilence, or famine for many years. The cities are clean, orderly, and safe; the shops well stocked with food, clothing, and other consumer items; policemen are evident only for controlling traffic and very few carry weapons. Soldiers are rarely seen. The housing is of a subsistence type, but is now sufficient to end the spectacle of millions of the homeless and dispossessed who, in the past, walked the tracks and roads or anchored their sampans in the rivers of China and lived out their lives in a space little larger than a rowboat. Crime, begging, drug addiction, alcoholism, delinquency are conspicuous in their absence. Personal integrity is scrupulus. In Canton, for example, a display case for lost and found articles in the lobby of the People's Hotel contained, among other items, a half-empty package of cigarettes and a pencil.

The people appear to be well motivated and cooperative. Women and men work side by side for equal pay. There are no visible distinctions of rank in field, factory, armed services, or government offices. A casual sense of freedom pervades personal relationships with an air of easy egalitarianism. There is no kowtowing, not even to the highest officials.

A factory worker in Peking earns the equivalent of about U.S. $22 a month, and his wife works, making as much or more. That income is ample for a subsistence-

plus existence because children are cared for free at a nursery or in public schools. Rent takes only about 5 percent of total income. Basic food prices are low and fixed. Medical care is free. Entertainment is cheap—admission to a movie is about 10 cents. Prices have been stable for years while wages have risen.

Cooking oils, rice, wheat, and cotton cloth are rationed, but the allotments are ample. The system seems to be designed more to assure basic distribution than to cope with shortages. In fact, large quantities of all rationed items, except wheat, are exported.

Bicycle and bus are the almost universal forms of transportation. The rickshas are gone; so, too, are most of the bicycle-pedicabs. Although China builds automobiles, including a few fine limousines as well as small sedans, they are for official purposes and limited in number. Production has been concentrated on such utilitarian vehicles as tractors, trucks, and buses. Private passenger cars are a rare sight on the streets of some cities. Indeed, there may be fewer now than immediately after World War II, when such vehicles were imported in considerable quantity.

Eighty percent of China's population is rural and is now largely organized into communes. The communes are in the nature of agro-towns and are a fundamental economic unit of the new China. They are also a new concept in social organization which acts to broaden and extend the virtues of interdependence of the old Chinese family system into a community of cooperation and group-action by many families.

One such unit which was visited, the Ma Lu Commune outside Shanghai, embraces over 6,500 families. In several successive years, this commune has reported an exceptional expansion of the production of grains, meat, and other agricultural commodities, much of which is now sold as excess to the commune's needs. Machine cultivation and power equipment is in wide use and electricity is generally available. The commune's small factories process a large part of the agricultural output and also produce gasoline engines, farm tools, spare tractor parts, insecticides, and consumer goods.

Ma Lu is regarded as a prosperous commune. Income last year was estimated at about $336 per household. It has 33 primary and secondary schools, a hospital, a clinic for each of the 14 production brigades, and a health worker for every team.

The accent in China is on today and the future, but throughout the country new interest is also being evidenced in China's rich past. Everywhere there are striking restorations of cultural shrines even as the search continues for more of the ancient heritage. Excavations of historic sites are underway throughout China. Wherever these works are undertaken, the effort is made to distinguish between the "bad"—that is, the cruel and exploiting rulers—of the past and the "good"—that is, the peasants whose creativity and labor were exploited for the well-being and pleasure of the few. Thus, in accordance with the teachings of Mao Tse-tung, a revolutionary content is made a part of archeology as it is of almost all other pursuits in China. There is, in other words, a determined effort to preserve a revolutionary consciousness in China.

The conservation of natural resources has also received great emphasis under the present leadership. So many trees have been planted in the Peking area, for example, that it has altered the local weather. Tree planting is a symbol of the new China and it is taking place all over China wherever the land is unsuited to agriculture. Gardening is also widely pursued even on postage-stamp plots inside the cities. Throughout China new productivity is being developed out of wastelands and by massive water control projects.

China, today, builds the new on the base of the old, and sometimes, with remarkable results. A most striking example is the revival of the ancient healing practices of acupuncture, whose origins go back over 3,000 years. Thanks to current research and experimentation, acupuncture is coming into wide usage in the treatment of a variety of ailments and as an anathesia in surgery.

The Capitol Physician, who accompanied us on the journey, witnessed four major operations in which no sedative or anesthesia was used, only the manipulated needles of the acupuncturist. It is estimated that about half of all the surgery now being performed in China is done with acupuncture anesthesia. Major experimentation is also underway in the use of the technique to cure deafness and other maladies.

The Capitol Physician visited seven different types of medical facilities, and on every one of his visits, I believe, he was accompanied by either Senator SCOTT and me separately or together, and on one occasion by our wives, during the course of which visits he was exposed to a representative cross-section of the Chinese medical services on the farms, in the factories, and in large city hospitals. He saw treatment dispensed by "Western" trained physicians, whose efforts are dovetailed with those of traditional Chinese physicians—experienced with herbs and acupuncture—and by basic medical workers, the so-called "barefoot doctors" who number in the hundreds of thousands and whose nearest counterpart in this Nation would be the medical corpsmen of the armed services.

Only a few years ago no modern medical care to speak of was available to the great preponderance of China's inhabitants. Now some kind of care is provided to every Chinese in need. In more remote regions, it may be elemental but it is available. There is no charge to workers in the cities but each family on the communes pays about 4 cents per month for medical services.

It should also be noted that epidemic and intestinal ailments have been drastically reduced in China. A heavy accent is placed on personal cleanliness and order. The people have also been repeatedly and successfully mobilized to cooperate in mass campaigns to eradicate disease-carrying snails, flies, and mosquitoes.

Some of the Chinese health techniques would have exchange value to this Nation. So, too, would Chinese methods of dealing with the disposal of human and animal excrement. Traditionally, these wastes have been regarded in China as an asset with great value as a fertilizer. The problem with their use in the past has been that they have also been a major source of intestinal and other communicable diseases. The Chinese now employ a very simple process for converting wastes into safe and effective fertilizers. It is estimated that 75 percent or more of all wastes are recycled back into the land, with the result that the fertility of the soil is better maintained while pollution of lakes, rivers, and streams is avoided. It is ironic to contrast the waters of this ancient land, which are supportive of a very large yield of fish, with what has been allowed to happen in this new land of ours.

In every aspect of society, there is evidence of China being rebuilt on the basis of Chairman Mao's dictum, "serve the people." The revolution has swept away much of the ineffectiveness of the past and enshrined a new concept of Chines self-reliance. While the family remains as the basic unit of the social structure, it is no longer in-turned and indifferent. Members of a family are now, also, active participants in the life of the communes and factories and they share a common pride in the achievements of Mao's revolution. In short, China has become a viable modern society with an approach to social participation and responsibility which is rooted in the past, meets the needs of the present, and offers a soundly based hope for the future.

### II. BACKGROUND OF U.S. POLICY

In the Chinese view, U.S. policy is seen as having pursued an unremitting hostility toward the People's Republic for at least two decades. That is how they regard the effort to wall off China by the trade quarantine for 20 years. That, too, is how they see the sending of troops north of the 38th parallel in Korea, the interposition of the 7th Fleet between the mainland and Formosa and the leadership of this Nation in urging the United Nations to label China the aggressor in Korea.

That there is a considerable basis for these Chinese feelings about U.S. policy is undeniable. The policy of this Nation was, indeed, hostile for many years, reflecting as it did the shock of the "loss of China" to the Soviet Union. To be sure, much has changed since then. It has slowly dawned upon us, perhaps, that China was not ours to lose nor the Soviet Union's to gain. Attitudes have changed greatly in the United States. China, too, has changed internally and in its relationships with other nations.

Yet, our policy has only begun to be revised. Still in place is the chain of "defense against Chinese aggression" whose principal links are the SEATO Treaty, the mutual defense treaties with the Republic of China on Taiwan, Japan and the Republic of Korea. Still largely in

place, too, are U.S. bases in Asia, U.S. troops to man the bases, hundreds of thousands of Asians equipped with the modern paraphernalia of war paid for by billions of dollars in U.S. military aid expenditures.

For a quarter of a century, the peoples of two great nations have been kept at arms length and, not infrequently, at sword's point by the policies which have led to this military confrontation. I regret to say that in the light of what is now taking place in Indochina, the end is not yet in sight, as I thought it was after the President's visit.

In retrospect, this separation has been one of the most ill-fated chapters in the history of this Nation. We may well ask ourselves to what extent are the policies of the past two decades responsible for the tens of thousands of U.S. casualties in Vietnam? For the tens of thousands more in Korea? For immense cost to the people of this Nation of these episodes and our other military activity in Asia during the past two decades?

III. THE PATH TO PEKING

The United States and China have taken only the first steps to restore normal relations. In my judgment, the rapprochement actually began with the announcement of the Nixon doctrine 3 years ago and the first draw-down of U.S. troops in Vietnam. The Chinese have been aware that the U.S. involvement was being reduced in Asia, even though it was accompanied, from time to time, by erratic military thrusts. Still, the troops were leaving, not coming into Asia. This signal of a change in U.S. policy was unmistakable to the Chinese. It meant that the President was reducing the military presence of the United States in Asia.

A number of propitious developments in both nations also helped to lay the basis for rapprochement. In China, the cultural revolution came to an end in a stronger, more united government, with a greater ability to handle its problems both at home and abroad. At the same time, the people of this Nation began to show a renewed interest in China. On October 25, 1971, The People's Republic of China was brought into the United Naions by a vote of 76 to 35. The world had begun to beat a path to China's door and Peking was prepared to open it.

President Nixon's visit to China last February was a long overdue step in normalizing relations between the United States and China. I applauded his action at the time. I am more than ever persuaded, at the conclusion of this journey, that it was the right action.

Where the path which was opened by the President and followed by the distinguished minority leader and myself will now lead is not clear. If the idea of rapprochement does not sink in the mire of the escalating war in Indochina, the path can lead, in my judgment, to an improvement of relationships throughout Asia.

In any event, a process of communication has begun again between ourselves and a nation whose population constitutes, perhaps, one-fourh of the human race—a population, according to U.S. Census estimates, which numbers something on the order of 845 million.

The President's visit served, immediately, to lower the level of tension in Asia and, therefore, has had a salutary effect on world opinion. It has also increased the interest of Japan and other nations of Asia in dealing in a normal way with the People's Republic of China. In short, it is clear that the tree of relationships in Asia and the world was shaken for the better by the President's initiative. What cannot yet be predicted is where the leaves will fall and what will be the look of the new foliage.

IV. THE WAR IN SOUTHEAST ASIA

Nor can we say whether the process of rapprochement will be aborted by what has now transpired in Vietnam. Certainly no problem loomed as large as the war in our discussions in Peking. The bombing of Haiphong and Hanoi—or at least their outskirts—the plan for which neither Senator Scott nor I knew when we left, took place while we were en route to China.

While there was no reflection of this development in the personal treatment which was accorded to us by the Chinese, in the discussions, the war dominated all else. The Chinese made it plain that our actions in Indochina were a matter of "great concern." If Taiwan is the crucial question for the normalization of Sino-U.S. relations, it is apparent that Vietnam is fundamental to a further relaxation of tensions in the Western Pacific. The Chinese comment on this matter was unequivocal, and I quote it:

> Unless this can be settled, there can be no progress on other issues.

How do the Chinese view the war in Vietnam? They see it as an attempt by the United States to dominate the political life of a region in which we have no business. Their memory of the tortured path of American involvement is long and sensitive. Readily recalled, for example, is John Foster Dulles' refusal to shake hands with Premier Chou En-lai at the Geneva Conference of 1954. So, too, is the disregard of the 1954 Geneva Accord by the United States.

The Chinese made clear their belief that the resumption of the bombing of the North would prolong rather than end the war. Strong exception was taken to the administration's contention that the action was jusified because North Vietnamese armies had invaded the South. From their point of view, "the invasion of Vietnam began with the—Tonkin Gulf—incident in 1964"; and United States actions in Laos and Cambodia, to them, also constituted invasion and aggression.

In my judgment, it is illusory to expect the Chinese, out of a desire to improve relations with the United States, to intervene with their Indochinese allies either to secure the release of our prisoners of war or to influence a settlement which is not agreeable to the North Vietnamese and the Cambodian resistance which is led by Prince Sihanouk. The Chinese want a rapprochement with the United States but they also want us out of Indochina. Their support of North Vietnam's position is unequivocal. They believe that the United States, one way or another, will ultimately be forced to withdraw and they seemed confident that, once we are gone, the people of the three countries will work out their own political arrangements.

In short, the Peking discussions painted a bleak picture of the prospects of peace on the basis of present policies of all concerned. Unless there are changes in the present course, therefore, visits to China will not alter the indefinite continuance of the bloodletting of Americans, Vietnamese, Cambodians, and Laotians, the destruction of the culture and environment of the Indochinese countries, the waste of tens of billions of dollars more of our resources, the sapping of the vitality of our Government, the distortion of our political processes, and the further division and frustration of our people.

It seems to me high time to ask why we are using the most advanced machines of destruction in that primitive land. Are we doing so out of force of habit? Out of fear? Fear of what? The fact is that we are still engaged in a war which, to put the best face on it, was sanctioned by what has now become a discredited policy toward China. The President's visit to China had the symbolic effect of marking the end of that policy. If the old China policy is no longer valid, is not the present involvement in the Vietnam war which derived from that policy also invalid? How can conscience, in these circumstances, continue to ask sacrifices of the armed services?

If we feel deeply for the ordeal of the prisoners of war and the missing in action and for their families, we will no longer acquiesce in the distortion of the problem of their release. They are not going to be released by mining Haiphong Harbor, nor by letter-writing campaigns to Hanoin or by postage stamps issued in their honor. They are going to be released, if the air war leaves any of them alive to be released, only when U.S. air and naval operations cease. While we remain in the war, the promise is not for their release but for more missing-in-action, more prisoners of war, and more casualties.

Incidentally, both Senator SCOTT and I brought up the question of the two American fliers who were shot down over Hainan Island in the South China Sea and the question of the release of Mr. John Downey, of Massachusetts.

We were informed that in the case of Mr. Downey, the sentence had been reduced from life to 5 years, and that consideration would be given. In the case of the two American fliers forced down over Hainan Island, we were informed that that was a different matter, and only that they would look into it.

V. EXCHANGES

In the Shanghai communique President Nixon and Premier Chou "agreed that it is desirable to broaden the understanding between the two peoples" through "contacts and exchanges" in such fields as science, technology, culture, sports, and journalism. Our trip was a manifestation of China's desire to carry out this pledge.

Plans are being made to open China's doors to more personal contacts. A date has been agreed to, for example, for the

visit to China by the leaders of the House of Representatives. When asked about the possibility of other Members of Congress coming later in the year, the response was that "they will be able to come." What the Chinese have in mind, it seems, is approval of visits by small groups on a case-by-case basis.

As to exchanges in other fields, the Chinese indicated keen interest in carrying out the spirit of the communique. As it was put in the discussions: "Scientists are beginning to come, some doctors have come, and more are on the way." Visits by journalists are still being handled on an individual basis and, apparently, will remain that way for the foreseeable future. The Chinese Government, apparently, is not prepared for permanent U.S. news bureaus in China at this time, although the question is still under consideration. We were assured, however, that to be admitted on an individual basis, journalists did not have to "sympathize" with China. "If they have doubts about us, they can come also." All that is necessary is that "they seek the truth. Then we will welcome them."

Exchanges in the other direction—that is, Chinese visiting the United States—seem to be of less interest to Peking. There are, nevertheless, some possibilities in the fields of science, culture, athletics, and entertainment in which this Nation might profit greatly from an exposure to Chinese achievements, skills, and talents.

VI. TRADE

We should not expect spectacular results in trade from the rapprochement, although, obviously, it can grow rapidly, relative to the present low levels. The Chinese have looked largely to their own resources for economic building blocks so their urgent import needs are limited. Their industrial competence is substantial and growing rapidly. Such products as locomotives, tractors, cars, sewing machines, clothes, electronic equipment, medicines, machine tools, gasoline, and so on across the spectrum, to nuclear devices and space rockets are now made in China. While supplements to their production in some of these items, new designs and processes are likely to be welcomed from abroad, the development of their own diversified productivity is and will remain the fundamental Chinese consideration.

China pursues conservative fiscal polices in international dealings as well as at home. A rough balance is maintained worldwide between imports and exports. The Chinese have no external debts—or internal, for that matter—and their foreign transactions, in effect, are largely cash on the barrelhead.

In 1971, it is estimated that China's exports were $2.3 billion and imports $2.2 billion, a total turnover of less than one-half of 1 percent of gross national product.

Main imports are wheat, chemicals, machinery, manufactured fertilizer, certain types of iron and steel, other base metals, and transportation equipment, notably ships and aircraft. At present, the major industrial purchases are from Japan and western Europe. Wheat has been purchased from Canada, and, until recently, from Australia. China's exports go principally to Hong Kong, Japan, Singapore, Britain, and West Germany, with the main items being rice, soybeans, vegetable oils, silk, fabrics, clothing, and a wide range of light industrial products. There is only a limited trade with the Soviet Union and eastern Europe.

This year, China has given visas to 30 or so U.S. businessmen to come to the Canton Trade Fair. It is likely, too, that congressional leaders who specialize in international trade matters would be welcomed at that showing.

The growth of the twice-a-year Canton Trade Fair since its beginning in 1957 illustrates China's capacity to enter into the world markets. Goods for sale at the first fair were limited and exhibited to only 1,200 people. More than 30,000 different Chinese products for sale abroad are displayed or represented at the current fair. In the first 10 days, moreover, attendance was 10,000.

The United States is estimated to have purchased only about $4 million of Chinese goods last year, mostly through Hong Kong. As the rapprochement proceeds, a substantial increase in imports of Chinese consumer goods is to be anticipated. It is not yet clear, however, what we have that the Chinese want particularly that they cannot get cheaper elsewhere, or what they have that Americans will need in quantity over an extended period. Nevertheless, every encouragement should be given to the fullest possible development of commerce, if for no other reason than that trade relations at whatever level can be an important factor in removing the wall of a quarter-of-a-century of separation.

VII. CONCLUDING OBSERVATIONS

With a bitter history of subjection to the arrogance of "great powers," the Chinese emphasize that their own future is identified with that of ordinary nations. They reject the status of "superpower" and insist that their system does not permit them to impose their views on others by force. On the basis of our visit, there is no reason to conclude that the Chinese leaders mean otherwise. While the People's Liberation Army seems to be held in heroic regard, it is well blended into civilian pursuits and is not in evidence as a force for militancy. There are no appeals for military crusades abroad. To the Chinese, defense does not appear to mean maintaining outposts in Southeast Asia or anywhere else beyond their own borders. On the contrary, it means that their own cities are now catacombed with air-raid shelters.

China's energies are clearly concentrated on development of its inner resources and their usages are predominantly civilian. Premier Chou En-lai insisted that:

> China wants to build on our own with our own resources. The country is big enough and we have enough left to do to keep us busy . . . Our system does not permit us to commit aggression.

President Nixon, by his visit, moved to gear U.S. policies to that kind of China after two decades of bending them to fit a preconceived notion of China as an aggressor nation. In my judgment, the President has set in motion a process which is not reversible except by what may now transpire in Indochina.

Dangers as well as opportunities involving all of Asia can flow from the President's initiative with regard to China. I am persuaded that the opportunities far outweigh the dangers. The United States, China, Japan, and the Soviet Union share a common interest in the peace and stability of the western Pacific. At some point in the future, these common interests may form the basis of new arrangements concerning the security in the region which will supersede the fear-based concepts which have persisted since World War II. The normalizing of relations between China and the United States is a start. Hopefully, it will precipitate a similar normalization between Japan and China and between the Soviet Union and Japan.

Regrettably, the eruptions in Indochina have lengthened the shadows over the prospects for peace in Asia. In my judgment, the new sorties into North Vietnam have tarnished the significance of the President's visit to China and, of course, the visit of the Senate's joint leadership. They have thrown into at least temporary eclipse the possibilities of Chinese-United States rapprochement. When these shadows lift and only then can there be an expectation of change, a change for the better in Asia.

There is a Chinese proverb:

> To see one time is better than to hear a hundred times.

For the past 23 years, the American people have not seen much of China. What was heard a "hundred times" often contained gross distortions and added up to a horror story, concocted in the minds of the fearful in this Nation which, on the basis of the visit of the joint leadership, and the findings of some other recent observers, bears no relationship to China as it is today.

The 16 days which were spent in China, traveling widely throughout the country and talking to people in all walks of life, have impressed me most profoundly. Not only did we go to the places on the schedule but we also went to areas which were forbidden to foreigners and were opened for the first time.

The dynamism, energy, and devotion of the Chinese people in confronting what they have set out to do with their society must be seen to be believed. Their system is working for them, and it is working well.

We are a young national culture relative to China, hundreds of years compared with thousands of years. There is much to be learned on both sides. The mutual educative process has begun anew. This time it must be maintained on the basis of equality of treatment and mutual respect. The days of a one-sided relationship—of teacher-pupil, master-servant, benefactor and dependent, and so on, back into the 19th Century's "enlightened and heathen," are gone and it is hard to see who in China or in this Nation will mourn their passing.

Chou En-lai noted that it had taken "100 years since the Opium Wars for the Chinese people to stand up." Today, they are standing up. Self-reliance is their

watchword and on that basis they are building a new China.

Premier Chou En-lai closed our talks with these words:

Please convey to the American people the friendship and best respects of the Chinese people.

The joint leadership of the Senate responded in a similar fashion. In my judgment, only what transpires in Indochina blocks the way to a full fruition of these reciprocal sentiments. When they are fulfilled in reciprocal acts of respect and consideration, they will redound to the benefit of the people of the United States, the People's Republic of China, and the people of the rest of the world.

Mr. JACKSON. Mr. President, will the Senator yield?

Mr. PERCY. Mr. President, will the Senator yield?

Mr. MANSFIELD. Mr. President, I yield to the Senator from Illinois.

Mr. PERCY. Mr. President, would it be the preference of the leadership that we comment on the report of the distinguished majority leader, or would he prefer that such comments be withheld until the minority leader is present?

Mr. MANSFIELD. The minority leader will not be here for some time. He is in conference. I am prepared to do my best to answer the questions.

Mr. PERCY. Mr. President, I would appreciate it if the majority leader would yield for a brief comment.

Mr. MANSFIELD. I would be glad to yield.

Mr. PERCY. Mr. President, does the distinguished Senator from Washington have a schedule that he would like to meet? If so, I would be happy to yield to him.

Mr. JACKSON. No. That is all right.

Mr. PERCY. Mr. President, my initial reaction is that at long last the cloak of mystery and mask of ignorance has been taken off China. And it has been taken off by our distinguished colleague, the majority leader, whose objectivity, sense of history and knowledge of this area, and whose reputation for objectivity, careful analysis and meticulous reporting are well known.

As the distinguished majority leader knows, I felt that it would have been desirable for the majority leader and the minority leader to accompany the President to China. I realize now—considering the value of this report to the Nation and to the Senate—that it would have been a mistake to have simply duplicated the festivities and the dinners and the occasions of that time. It has been invaluable to have this followup visit which was unhurried and of longer duration than the previous visit made by the President.

I was struck very much by the comments of the majority leader concerning the will of the Chinese people to succeed, and their willingness to work hard to make their society viable. I cannot help comparing that, with some degree of sadness, to what some consider the softness which has developed in our society because of the affluence in which we now live.

In a Gallup poll it was revealed that 54 percent of the people said that we could be and should be working harder than we actually are so as to help our economic situation at the present time.

I have tried many times through many channels to visit China.

I am very hopeful, now that we know the first impressions of our fine leadership, that other Members of the Senate could go, in whatever capacity, to see the country at firsthand. However, I feel—in lieu of that—that this report has been invaluable.

When the majority leader said that they even have a favorable balance of payments, I was waiting with bated breath to see if they had a balanced budget. I would say that if they have accomplished that, whether we be liberal or conservative, Democrat or Republican, we had better take a look at that society and not view it simply as an aggressive society designed to dominate the world. If that belief can be removed from our thinking, and we can look at China with an open mind, I believe that we will be far better off. While we reject the restraints which that society places on its people, I am sure that there is much to be learned there.

Mr. MANSFIELD. Mr. President, I thank the Senator from Illinois for his excellent remarks. I may say, if I did not say so in the course of my speech, that there is no internal debt in China.

Mr. JACKSON. Mr. President, will the Senator yield?

Mr. MANSFIELD. Mr. President, I yield to the distinguished Senator from Washington.

Mr. JACKSON. Mr. President, I compliment the distinguished majority leader for a very fascinating and interesting report. I may not agree with all of the conclusions. But I do know that the distinguished leader has been a scholar in this area since back in the early twenties when he was a marine and later when he was a Member of the House of Representatives where he took a special interest in the emerging China as a result of World War II.

I am just curious about what I think is, of course, a very fundamental problem these days when we talk about Russia and China and the United States. Is the distinguished majority leader in a position to comment at all on the concerns, if any, of the People's Republic regarding the U.S.S.R., the developing Bangladesh, the relationship with India, and what some scholars allege to be the new containment of China by the Soviet Union?

Mr. MANSFIELD. Mr. President, the question of Bangladesh was not raised. India was mentioned only incidentally. The question of the border relationship between the U.S.S.R. and the People's Republic was raised.

At the present time negotiations are being resumed, perhaps because of the initiative shown by President Nixon in visiting Peking last February. In any event, within a week and a half after the visit, the Russian representatives asked to meet with the Chinese representatives to consider the question of the border relationship between the two countries.

What the Chinese want at this time is a rectification of the present border. They seem to be unable to get it at the present time.

The Senator may recall that the Chinese did move down into India, down into Assam, in 1962, I believe, to rectify the frontier there. They withdrew their troops immediately on their own initiative behind the line, they claimed after having advanced far beyond it.

The border problem between the Chinese Republic and the U.S.S.R. is most serious. The Russians have hundreds of thousands of troops along the border and in Mongolia.

Mr. JACKSON. Mr. President, is it the impression of the majority leader that they are deeply concerned about their relations with the Soviet Union?

Mr. MANSFIELD. They are very deeply concerned over the common frontier. I think that it covers about 4,500 miles. The concern that is deep. We do not know how wide is the gulf. It is of long standing. And it will not be easily overcome except, perhaps, by same act of ours of common concern to them.

Mr. JACKSON. Mr. President, in that connection I take it that the Senator is referring to bringing together the Chinese and the Russians.

Mr. MANSFIELD. The Senator is correct. If they are forced together, if they come together in the immediate future, as I see it, it will probably be because they are forced to come together. The differences are wide at the moment.

Mr. JACKSON. Does the majority leader feel that the new rapprochement with China will have an adverse effect on our relations with the Soviet Union?

Mr. MANSFIELD. I do not think so and I think the President has made it very plain that on the basis of his visits to Peking, and the upcoming one to Moscow, which I devoutly hope goes through, it is not his intention to take sides in any Sino-Soviet dispute. I am sure that would be the feeling of the American people generally speaking.

Mr. JACKSON. The majority leader agrees that in this triad one is put to the supreme test of diplomacy and judgment in trying to have appropriate relations with the two other great powers, the Soviet Union and China, and that historically the Russians have been paranoid on China. This goes back centuries. Is that correct?

Mr. MANSFIELD. Yes. I may say the Soviet Union at the present time holds between 600,000 and 700,000 square miles of territory which was taken from China mostly in the last century.

Mr. JACKSON. 1840–1860.

Mr. MANSFIELD. When Russia was under the czars.

Mr. JACKSON. And on the other side the Kremlin Wall was built originally to keep the Mongols out.

Mr. MANSFIELD. The Senator is correct.

Mr. JACKSON. So that there is a real, deep, historic problem that transcends so-called current ideology, with Marxism, Leninism, and whatever.

Mr. MANSFIELD. The Senator is correct.

Mr. FULBRIGHT. Mr. President, will the Senator yield?

Mr. MANSFIELD. I yield.

Mr. FULBRIGHT. Mr. President, I congratulate the Senator from Montana, the majority leader, for his very per-

ceptive report on China. I am sympathetic to the efforts of the Chinese to improve the lot of their people and I judge the Senator is also. I find nothing in the statement with which I do not agree. I think it describes the progress the Chinese are making, and it should be very sobering to this Nation.

I remember one thing that Mr. Kissinger said just prior to the President's leaving. He said the opening up of communication with China would present this country with a very serious challenge. He did not elaborate on the nature of that challenge.

The description the majority leader has given of the progress they have made and are making does present us with a serious challenge. The Chinese people have great talents and we should recognize the facts of life and forget our illusions about them.

I do not think we can any longer afford wars around the world and particularly the one in Southeast Asia. There are many reasons, but especially now because we are confronted with two great nations, both of which, I think, are paying attention to their own affairs and are growing stronger while we are growing weaker. So I hope Senators will pay particular attention to the report of the Senator from Montana.

Mr. MANSFIELD. I thank the Senator. The report was supposed to be not so much sympathetic as to be as honest as I could interpret the findings made available to us. But I appreciate the remarks of the Senator.

Mr. SYMINGTON. Mr. President, will the Senator yield?

Mr. MANSFIELD. I yield.

Mr. SYMINGTON. Mr. President, I wish to join my colleagues in congratulating the majority leader on a thoughtful and constructive presentation of his trip. I am sure the American people will read his report with interest, especially when they consider what is going on in the world and what our participation is in that part of the world.

Mr. MANSFIELD. I thank the Senator.

Mr. INOUYE. Mr. President, would the Senator yield?

Mr. MANSFIELD. I yield.

Mr. INOUYE. Mr. President, I wish to join Senators in complimenting my distinguished leader for this extraordinary and highly perceptive report.

Ever since the President's journey to Peking many Members of Congress have indicated an interest in also journeying to Peking. I have heard that our majority leader has made other efforts in the past to make this journey and I am certain all of us will be interested to know the procedure we should follow, what pitfalls we should avoid. The leader has taken other initiatives. I am certain we would like to hear about those.

Mr. MANSFIELD. Yes, the Senator is correct when he indicates I have been endeavoring for some years to visit China. I did not intend to bring this out during the course of this statement but I guess it is all right to discuss it now. Some time before Dr. Kissinger made his first trip to China there was transmitted to me through several channels a report that Premier Chou En-lai had invited me to visit China in response to a request which I had made during the previous administration and had renewed at the outset of the present administration—on both occasions, may I say, with the full knowledge and support of the White House.

Since the reported invitation had not come to me directly from the Chinese Premier, and after discussion of the matter with the executive branch, I did not respond, with an acceptance. Instead I sought further clarification as to the validity of the invitation but without success. A cable which I sent Premier Chou was returned marked "undeliverable" from Honolulu.

Several weeks went by during the course of which the President's visit was arranged by Mr. Kissinger on his secret mission to China. The President then went to China and, as the Senate knows, brought back an invitation from Premier Chou on the basis of which the joint leadership of the Senate followed in his path.

When the Senator from Pennsylvania (Mr. SCOTT) and I were introduced to Premier Chou En-lai, the Premier opened his first conversation with us by remarking, in humor, that he thought he had invited me a year and a half ago and he wondered why I had not come at that time.

I refer to this incident, Mr. President, because it indicates to me that the Chinese Government has been ready for some time to move forward in rapprochement with this Nation. It seems to me that the order of visits was not only most appropriate but far more important and useful than would have otherwise been the case. The best way and the most effective way to start the normalization of relations with China should have been and was through the visit of the President of the United States.

May I say in response to the question that we did raise the Senator's name and the names of other Senators with Premier Chou En-lai, and he indicated that the possibilities of requests being accepted were quite good. I believe I mentioned this to the Senator in some small detail and I will talk to him in more detail later.

Mr. CHURCH. Mr. President, will the Senator yield?

Mr. MANSFIELD. I yield.

Mr. CHURCH. Mr. President, I looked forward all day to hearing the remarks of the distinguished majority leader, and then, due to circumstances beyond my control, I could not get to the Chamber until the leader had completed his remarks. But I shall read them with great interest and I am sure with great approval.

The Senator from Montana is a student of Asian affairs and if his good advice had been followed by the Government of the United States through the years we would not be in such grave troubles there today.

I am very pleased that he had this opportunity to go to China and I know we will all profit from his remarks today.

Mr. MANSFIELD. I thank the Senator.

Mr. STENNIS. Mr. President, will the Senator yield?

Mr. MANSFIELD. I yield.

Mr. STENNIS. Mr. President, I do not wish to delay the Senator from Montana or the Senator from Pennsylvania, but I wish to highly commend both of them for having made this trip and for the very valuable information they have supplied as a result of their perceptiveness.

Mr. MANSFIELD. I thank the Senator.

Mr. President, I wish to conclude by saying that it was a pleasure and a privilege to make this visit to China in company with the distinguished Republican leader of the Senate who, as I indicated, is a man of great cultural knowledge, a man of deep personal interest in the affairs of China, and a man who has indicated his desire to expand his knowledge and become more understanding of many of the facets of the Far East which were new to both of us, even though both of us had been there on several occasions.

Mr. SCOTT. Mr. President, first I want to thank the distinguished majority leader for his very kind and warm remarks; second, to say that in the course of our 16 days of travel of 8,000 kilometers, or 5,000 miles, all of it was made the more pleasant and enjoyable, without any slightest area of friction or disagreement with the majority leader or with other members of our group who were traveling together; that the distinguished majority leader's temperament is such that simply to be in his company is a pleasure in itself; to travel with him and to observe the great depth of his knowledge and breadth of his interest in the whole Asian scene is in itself a reward and was for me a great opportunity.

I feel that I learned more because I was traveling with the distinguished majority leader, and I believe that both of us learned more because we were able to place the visit on a bipartisan basis, and thereby removed from it any aspect of political advantage. We were able to reassure our hosts, by reason of the bipartisan nature of the visit, that both parties in America are intensely interested in improving communications and in widening relationships with the most populous nation on the face of the earth.

With the tablet blank and precious few available to contradict us there is present the terrible temptation to paint the People's Republic of China in broad strokes and to hypothesize great conclusions in a manner calculated to evoke admiration for our brilliance. Happily, that temptation is tempered by the knowledge that others shortly will follow us to China. Likewise, the breadth and depth of China is such that we will be forgiven for not having absorbed it completely in 16 days.

Let us then limit ourselves to more specific statements based on personal conversations, observations, and inferences drawn from empirical evidence. In short, those things reasonable to believe based on experience and upon which we feel secure in making judgments and recommending action.

In 16 days we traveled over 5,000 miles visiting six cities: Peking, Shanghai, Hangchow, Sian, Changsha, and Canton. On various inspection trips and tours in those cities we traveled over 500 miles by auto. We traveled by motor

launch through the harbor of Shanghai on the Whang-po River to the Yangtze River. Thus we obtained at least a short look at a solid cross section of China—rural and urban.

One cannot adequately describe the cultural shock of being immersed in a country which for 22 years has been beyond our ken. Most of us in the Senate have rarely in our recent years been in a position where we did not share some control of the situation. Here we could only observe and draw some highly tentative conclusions. The usual diplomatic preparations, consultations, and niceties await the further normalization of relations. There is no familiar road for the traveler to China.

Characteristic of the entire visit and of every person in it was the immediate warmth, grace, and courtesy of our reception in Shanghai on April 18. We can in no way overstate the perfection of all our Chinese hosts in their hospitality. Clearly they spared no effort to insure our comfort, safety, and enjoyment. Each individual in touch with our party was an excellent ambassador for his country. Their entire performance bore great testimony to their sincerity and professional ability. Time and again we expressed among ourselves the hope that Chinese visitors to the United States would receive as fine a reception as we did in their country. Upon our return we learned that Chinese athletes had, indeed, been received very well.

China can be understood and evaluated only if one approaches it in the light of the forces which motivate Chinese action and the historical perspective against which the action is played. These forces are not mere abstractions to be thought of fondly on patriotic holidays—they are the basis of daily action and the living, breathing stuff by which the New China is being fashioned.

Liberation—1949—is the "great divide." After it comes the New China of Chairman Mao and the Chinese Communist Party achieved after decades of struggle. Before 1949 lie 50 years of chaos, deprivation, and invasion which were the culmination of centuries of domestic exploitation and foreign oppression.

All production and action is measured by its relation to "before liberation."

Two all-encompassing achievements of the CCP establish its credibility and appeal to the Chinese completely aside from ideology. One is the establishment of nationhood which makes China, for the first time since the 18th century, able to conduct its own activities on its own territory free of outside interference and domestic disorder. China has emerged as a unified state under the exclusive control of its central government.

The second great accomplishment since liberation is the attainment by the masses of a standard of living acceptable to them. This means that the masses have food, clothing, shelter, and health care sufficient to maintain their viability as workers in a producing society without reference to survival as a daily concern. It is the difference between existence and life—even though their contemporary standard of living is still low, by their own candid admission. These bases are the earth and the atmosphere on which China stands and of which it breathes. Teaching, guiding, vivifying, and heading is Chairman Mao. Larger than life and somehow closer to the red sunrise in the east than other men is the one who brought the New China into existence and who defines its present and future.

Has China rid itself of gods and erected the figure of a man to godhead?

We queried our hosts closely on the aspects of Maoism as a cult of personality or deification to replace the old, gone gods. "Mao receives the admiration and affection of the people because of what he has done for them—there is no cult of the personality." Still, the trappings of the one Supreme Teacher are there. Purity of thought has developed imperfections under less favorable circumstances in other places. What do the Chinese people believe in? "Materialism—Marxism as defined by Chairman Mao."

Two thoughts of Mao most valuable for Americans to appreciate are these:

We must see to it that all our cadres and all our people constantly bear in mind that ours is a big socialist country but an economically backward and poor one, and that this is a very great contradiction. To make China rich and strong needs several decades of intense effort, which will include, among other things, the effort to practice strict economy and combat waste, i.e., the policy of building up our country through diligence and frugality.[1]

On what basis should our policy rest? It should rest on our own strength, and that means regeneration through one's own efforts. We are not alone; all the countries and people in the world opposed to imperialism are our friends. Nevertheless, we stress regeneration through out own efforts. Relying on the forces we ourselves organize, we can defeat all Chinese and foreign reactionaries.[2] We stand for self-reliance. We hope for foreign aid but cannot be dependent on it; we depend on our own efforts, on the creative power of the whole army and the entire people.[3]

The Chinese "man in the street" reacted to our presence with great curiosity, particularly in Sian and Changsha where we are relatively rare as a genus. But at every place we gathered crowds of friendly, curious onlookers. Children often clapped and waved, which we returned in the Chinese manner. While some groups appeared conditioned to clap at the appearance of black, red-flag autos carrying foreigners, reactions to us were we believed for the most part spontaneous. Amusingly, our appearance on a small side street in Peking caused a youngster leading a squad of schoolchildren to break out and lead them in singing a well-known school song, "Albania." We believe that while we were obviously identifiable as foreigners, the mass of people outside the specific places we visited in the various cities were not provided any particular knowledge of us or of our presence, except in Peking. Our hosts insisted, however, that some of the people in other cities were aware, from their newspapers, that we were U.S. visitors.

I might add that we were seen on television in Peking, and I believe were recognized on the streets by reason of that.

Foreigners are not common sights and the Chinese curiosity is understandable. No political campaigner minds that in the least. Interestingly, I will add here, the reporters who went with us to China reported on the lack of curiosity of the Chinese. I wonder whether there was a lack of research on the part of the press; because I have known Chinese people before, in and out of China, and I have never known them to be anything but highly curious about everybody and everything. And the moment any of us stopped on the streets, to look in a window or even to cross the street, before you knew it, you gathered silent crowds of two score or more, simply to look at the round eyes and to stare at the westerners.

We were told that the Chinese were undemonstrative, and yet we won applause in parks and almost everywhere except the crowded central streets. In the country, in the communes, in museums, and everywhere there was evidence of a desire to exchange gestures of good will with the westerners.

How do the Chinese describe the state of their economy? Their state of production? They call it "backward." They describe their country as "developing" or "emerging." Most definitely the Chinese are not backward in energy. There is no apathy, no toleration of any tendency toward deterioration. In the factories, on the communes, and in the streets, one senses vigor, vitality, and dedication—a desperate struggle to move ahead. But there is no question that this is a developing nation. When in response to Chinese questions, we mentioned food surpluses in the United States we strained their credulity. At this time China has reached a plateau in agricultural production. It occupies about 80 percent of the population. It produces enough to feed the Chinese. However, Chinese agriculture today is the perfection of an ancient system—not the establishment of modern agriculture as we know it. Night soil, after being disinfected, remains the basic fertilizer. Horses, oxen, and water buffalo pull the plows. Human hands do the cultivation. Still, there are many small multipurpose tractors and I suspect these will become more prevalent. The Chinese people recognize the need to move their population from agricultural to greater industrial production. They are hampered by a lack of research, farmer education, and the sheer logistics of making an impact on about 640 million farmers. Nonetheless, they are moving with purpose.

Outside Shanghai we visited the Malu People's Commune of Chiating County. The Chinese describe it as below:

MALU PEOPLE'S COMMUNE OF CHIATING COUNTY

The Malu People's Commune was set up in September 1958 by merging a number of ad-

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[1] On the Correct Handling of Contradictions, Among the People (Feb. 27, 1957), list pocket ed., p. 71.

[2] "The Situation and Our Policy after the Victory in the War of Resistance against Japan," (August 13, 1945), *Selected Works*, Vol. IV, p. 20.

[3] "We Must Learn to do Economic Work," (January 10, 1945) *Selected Works*, Vol. III, p. 421.

vanced agricultural producers' cooperatives. The commune consists of 145 production teams under 14 production brigades with a population of 27,532 in 6,632 households. The land under cultivation amounts of 33,923 *mu* (2,261 hectares) with grain and cotton as the principal products. It has also developed livestock-breeding, fishery and side-occupations. Furthermore, it has set up some small factories in the interest of farm production and the commune members' welfare.

Over the past 10 years and more, the commune members, implementing resolutely the principle of "taking grain as the key link and ensuring an all-round development," have carried out water conservancy projects, levelled fields, transformed nature and gradually promoted mechanization, thus bringing about a continuous growth in farm production. With the completion of a tractor station and 25 electric pumping staions, the commune has brought all its farmland under electric irrigation and expanded the machine-ploughed area to 95 per cent of the cultivated land. Bumper harvests have been reaped in grain production for ten years running. The average grain output per mu for 1971 reached 1,560 jin (11,700 kg. per hectare), registering an increase of 1.5 times over 1957 (the year of Shanghai's liberation). Compared with 1970, the output of cotton slightly decreased in 1971 due to a grave natural disaster; it was, however, still 4.2 times the figure of 1949. There has also been considerable development in livestock breeding, fishery and side-occupations. In 1971 the number of pigs raised by the commune reached 38,000, an increase of 5 times over 1957, or 8.5 times over 1949; domestic fowls sold to the market numbered 70,000 an increase of 5 times over 1957.

The commune runs six factories for repairing and producing farm tools, making mutliple-use of farm and sideline products, processing grain and fodder and producing bamboo-ware, towels and chemicals. At present time, these factories are able to provide the commune with all the small farm-tools it needs, part of the insecticides and some of the small diesel engines for farming machinery and vehicles. In addition, they process spare parts for some of the tractor and chemical fertilizer equipment plants in the city and produce non-staple foodstuffs for the urban market. The output value of these commune factories for 1971 accounts for about 50 per cent of the commune's total output value.

Along with the steady development of farm production, the material and cultural life of the commune members has further improved. There are 33 primary and secondary schools in the commune and all the school-age children are enrolled. There is a hospital in the commune, a clinic for every production brigade and a health worker for every production team. Common diseases can be treated in the commune. The income of the commune members has been increasing year by year. In 1971 the average income per household was over 840 yuan, 170 per cent above the 1957 figure or about six times as much as that before liberation.

At this commune we visited one production team—the smallest unit of accountability. In addition to rice and other grains the team raises chickens, ducks, hogs, sheep and fish. It has its own small repair and implement manufacturing facilities. In short, it is a model self-contained rural community of above average capability. Specialization of production in larger units is not yet practiced. Its residents pay 86 cents U.S. a year for medical services. Each household has a small reserved plot on which to grow vegetables for home use. Average household income was $361 U.S. per annum last year. A four-room house—no plumbing, coal fire in kitchen—costs the member about $250 U.S., and, I might add, costs the member who is fortunate enough about $800 U.S. to build, with the help of his associates, and he is able to borrow money from the local cooperative to assist him in making payments on the house. Whether or not he is able to dispose of the house later we were not able to establish. We were told that he could, but we were never told how he could.

We visited also one of the 14 production brigades of the West Lake Commune outside Hangchow. Ten of these brigades specialize in tea production and this is a relatively prosperous commune with households receiving about $430 U.S. last year.

At West Lake, as in the handicraft and art factories, we discovered that variation is allowed within the framework of the planned collective economy and revolutionary spirit. There is no one way to do everything. While industrial wages are standard on an eight level nationwide scale we found evidence of a piecework approach in other areas. Monetary incentives were abolished during the Cultural Revolution. However, individual workers may receive vacation time at a spa to honor them for exemplary achievement. At West Lake the tea workers who dried and rolled fresh tea in large heated bowls accumulate "work points" based on the "quantity and quality" of the output of a work team. Four man team results and standings are posted daily on a large blackboard.

We visited several handicraft factories. In these the wages varied according to technical competence and output—ranging from $13 U.S. to over $40 U.S. per month, with most around the industrial average of $24 U.S. per month. China maintains a high quality output of traditional labor intensive handicrafts made with modern tools and assembly line production so far as possible. Preservation of traditional skills and arts is encouraged. This homage to the workers of China through the ages supports the party line.

May I add as one interested in the cultural aspect of Chinese civilization that the work is technically good, it is skillfully done and well made, but it is conventional, it is contemporary; it carefully honors traditional work. It is not daring, it is not innovative, it is not impressionistic, it is not abstract, and one suspects it had better not be.

Members of our party visited the Peking General Petroleum Chemical Works which was the only modern industrial works we were shown. Below is the Chinese description:

THE PEKING GENERAL PETROLEUM CHEMICAL WORKS

The Peking General Petroleum Chemical Works is an integrated complex for the multi-purpose use of crude oil. The whole project comprises a total of 35 units: 13 oil-refining and 22 chemical units.

The construction of the Works started in October 1968. To date, the oil-refining units are in the main completed and in operation, the crude oil processing capability being 2.5 million tons a year; three of the chemical units (synthetic rubber, phenol-acetone resin and polyethylene-propylene) are completed and in operation, while the rest is still under construction.

When completed, the Works can turn out nearly 100 petroleum products, including various kinds of fuels, such as gasoline, aviation kerosene and diesel oil, various kinds of lubricants, benzenoids as well as synthetic rubber, synthetic fiber and synthetic plastics.

After biochemical and other treatment, waste water from the oil refinery can be used for irrigation and raise fish and ducks. Crops are growing well, and fish and ducks are normal.

In accordance with the Party's General Line of "going all out, aiming high and achieving greater, faster, better and more economical results in building socialism," the broad masses of workers and staff members have, in the course of building the Works, adopted the method of researching, designing, constructing and putting into production concurrently, and by so doing have gained time and accelerated progress.

Located in the tortuous terrain of the granite foothills 30 miles southwest of Peking the works are a prime example of Chinese practice in the dispersion of industry and regional self sufficency.

This general line is pursued throughout the country as a basic planning element. The use of all resources and all production priorities come from careful 5-year plans detailed in 1-year plans. The planning process proceeds from the State to the province to the county and to the commune/town. At each level there may be discussion with the planning council of the superior body by that of the inferior body. Goals are very specific and detailed. There is much evidence that the Chinese have been successful in achieving these goals especially in extending irrigation and health care. And here I interpolate that in the Southern Province of Kwangtung—Canton—many of the communes are able to harvest three crops a year; and most of them, we were told, harvest two crops a year of rice and of other foodstuffs.

EDUCATION

Chinese higher education suffered immense disruption from the cultrual revolution. Only now is it returning to stability. Only recently have full classes been accepted at the universities we visited. Acceptance is more a function of recommendation by one's local revolutionary committee, cadres, or army than of prior preparation. Likely prospects and leaders are sifted out of the masses for higher training. Students are dedicated and enthusiastic. Facilities are adequate. Curriculums are basic and specialized with an eye toward utilization of the student in production as soon as possible. The standards of university education cannot, at this time, approach the standards of western universities. It appears to me that they have not yet recovered from the culture shock of the 1965 events and those following, nor has research been returned fully to its proper place in Chinese academic life. Every effort is made to prevent the creation of an educated elite distinguishable from the masses. This levels, rather than elevates, the entire process.

The Chinese claim that primary schooling is universal but state that the large number of school-age children on city streets during school hours is caused by schooling in shifts. Probably no more

than 40 percent of the eligible population attend secondary schools. However, at the present time more complete education, we are told, would not fit the development stage and would overeducate the people for the station in life available to them. Lack of sufficient facilities is probably the real reason.

HEALTH CARE

Medical facilities from the farm and factory level to the large city hospital and medical schools were visited, particularly by Dr. Pearson, the Capitol Physician, whose company and whose inquiries and conclusions were of the utmost value to all of us. China's medicine today is oriented toward delivery of medical care to the great mass of farmworkers who comprise over 80 percent of her population. Until a few years ago, virtually no medical care was available to this huge segment.

Medical schools are accepting students with only a few years of formal schooling. They have reduced the number of courses in the time in school by half—now 3 years. And they have increased the numbers of students many fold, in order to turn out more doctors for the masses. Chung Shan Medical School, which reopened last year, has 600 students in each class compared with about 100 when it closed in 1966. They are training "barefoot doctors," who would compare to our medical corpsmen. These medical workers have played a very important role in public health measures, and in mobilizing the workers to eradicate snails—which cause the dread disease schistosomiasis—and reduce flies and mosquitos. Treatment of feces—which still constitutes over 70 percent of China's fertilizer—has been a major contribution of the medical workers—a major advance which could well be used in many other countries.

It is interesting, too, to notice the dedication of children to the eradication of flies and insects, to such an extent that, although we were traveling at times in temperatures of 90 and 92 degrees, neither my wife nor I were ever to observe—and this was a joint observation—more than a single fly engaged in lonely exploration in Canton.

There is excellent integration of the various medical programs with the industrial and farming programs.

Acupuncture treatment, practiced in China for several thousand years, was observed several times, by our physician and by other members of the group. It is used for intestinal illness, headache, toothache, rheumatism, pneumonia. Whether it has intrinsic value in addition to its psychological benefits need further assessment.

Acupuncture anesthesia has also been observed and is undoubtedly effective in many cases. Many of us saw a very interesting documentary movie illustrating an operation under these conditions. It is used in about 50 percent of the surgery performed at the institutions we visited. Some of our group observed cesarean section, eye surgery, stomach removal, and thyroid gland surgery performed with no other drugs or anesthetic agent. This would seem to have obvious advantages and is being looked at with great interest by U.S. and other Western medical men. The mode of its action is not completely understood, even by the Chinese physicians, and research is now going on at a great rate in this area; but it is thought that some blocking of painful impulses occurs at the spinal or at the brain level.

The progress of medicine in China from its former level was impressive. The dedication and enthusiasm of medical interns at all levels, especially their efforts at continual improvement, was surprising and refreshing.

CULTURE

Built into the system at every level is the structure of revolution and its continuation. CCP cadres at all levels of organization guide the masses in self-education through criticism and self-criticism, and in education through mass persuasion. The good worker finds a good character of praise posted on the village gate. The bad worker finds a bad character poster. Party members must be exemplary or face expulsion. Newspapers and radio praise good workers and condemn lackeys. Merit is popular. Songs, plays, ballets, children's games, poetry, literature, and every conceivable medium carry the Party line. Dissent finds a presence only in the happy stories of repentant dissenters who recant and are reconciled to the Party line through self-education and education and whose reconciliation is usually featured in song and story, with much gestures and appropriate music. There can be no legitimate expression of self or anything else outside the furtherance of the revolution. As Mao says:

> In the world today all culture, all literature and art belong to definite classes and are geared to definite political lines. There is in fact no such thing as art for art's sake, art that stands above classes, art that is detached from or independent of politics. Proletarian literature and art are part of the whole proletarian revolutionary cause: they are, as Lenin said, cogs and wheels in the whole revolutionary machine.[4]

The Chinese have assiduously rehabilitated, preserved, repainted, and maintained palaces, parks, and other evidences of China's past history. From these the masses learn of their proud history as workers of great skill and accomplishment. They learn, also, of their exploitation by the emperor and the ruling classes. There is no difference today in the amount of work they do—the difference is that they enjoy its benefits much more fully and directly.

Rather than elaborate on the splendor of the various historical sites visited, I have listed them and included their description by the Chinese in an appendix.

DISCUSSIONS

During our 16 days in the People's Republic of China we had the opportunity to engage in frank and meaningful discussions with leading Chinese Government officials. We spent almost 5 hours in discussion with Vice Minister of Foreign Affairs Ch'iao Kuan-Hua and another 5 hours with Premier Chou En-lai, plus 3 hours at a dinner given for us by the Premier.

These discussions covered many subjects and, as might be expcted many hours were spent on the subject of Indochina. Senator MANSFIELD and I agreed to the request of the Premier that, because countries other than the United States and the People's Republic of China were involved in the areas discussed, we would not publicize the more sensitive aspects of our informal discussions.

Therefore, I cannot say too much about the discussions except to say they were frank, candid, and sometimes blunt discussions, with disagreements freely aired and areas of agreement searched for.

One of the subjects discussed in which China and the United States people are interested is exchanges and visits.

The Premier indicated that he felt that exchanges in various fields should be encouraged and told us of the some 30 American businessmen who were going to attend the Canton Trade Fair, some of whom I did see in attendance at the fair later. The Premier also told us that the House leaders, Representatives BOGGS and FORD, were coming to China in June—I think he said June 26. We learned the date first from the Chinese Premier, and we found him extraordinarily well informed on American affairs. He said the Chinese would also give consideration to the visits of other Members of Congress. In that connection, as the distinguished majority leader has noted, members of certain committees were mentioned, some by name. The desire to visit China was indicated as to Members of the Senate and the House generally, who would like to come perhaps in groups of two, three, or four, perhaps later on next year, or alone, or perhaps in even larger groups, as the facilities of the Chinese expand.

The difficulty in handling visitors is a lack of adequate hotel facilities for large groups, the need for additional trained interpreters, and for additional members of the Chinese Institute for Foreign Affairs. Their willingness to receive visitors, in my opinion, is evident, but their capability for handling visitors appears to be limited by their facilities.

The Premier was especially pleased by the reception the President and the American people accorded the China's ping-pong team on its recent visit to the United States. We learned about the reception of the Ping-pong team in the rose garden by the President, again from Premier Chou En-lai, as our news sources were not exactly adequate while in Peking—other news sources.

One got the impression that the Chinese were very desirous of increasing exchanges between the two countries but did not at this time have the facilities to handle a great influx of visitors. They are working toward increasing their visitor facilities and their travel service so that they can provide for more and more foreign visitors.

In this regard, the distinguished majority leader and I also mentioned cultural exchanges, journalistic exchanges, and athletic exchanges. Our Chinese hosts indicated perfect affability toward the idea. They were entirely openminded. They mentioned, for example, the

[4] "Talk at the Yenan Forum on Literature and Art" (May 1942), *Selected Works, Vol. III*, p. 86.

Shanghai Ballet which was performing a ballet entitled "The White-Haired Girl" that night, which we saw, and indicated the possibility of similar ballets visiting the United States.

I would not have been true to Pennsylvania if I were not to say that I advocated the visit to China of the Philadelphia Orchestra and the Pittsburgh Symphony. The distinguished majority leader has his own favorite cultural and athletic suggestions to make and I will not impinge on that; but I believe that the Government is openminded to these exchanges.

We did also raise certain questions, which I cannot go into detail about, but it has been brought to the attention of the highest authorities that it would be hoped those journalists imprisoned somewhere in Indochina or in China can be released. We spoke to at some length but with some breadth of generality to the proper people.

I referred to Welles Hangen of NBC; Shawn Flynn, a freelance journalist; Dana Stone of CBS; and Terry Reynolds of UPI. It is our understanding that all these matters are under review.

We received no promises but we remain hopeful. We hope that our intercession will have been helpful. Only time will tell.

SUMMARY

We have only begun to plumb the depths of China. We need to know so much more about it—or more simply put—what makes it tick. There is no question of great material progress since the Liberation. But where does China go from here? Can a fluid state of revolution be maintained without disastrous instability in the society? Can the easily evident fervor and dedication be maintained? Is there comparable leadership after Mao? How far do China's claims of nonaggressive aims really extend?

I must add that we were impressed that the Chinese people believe they have enough problems at home, that their interest in territory, up to this time, extends only to their interest in Chinese territory—or Chinese claimed territory established by their own records in the past. So that their record of nonaggression is good.

I repeat, how far does that claim extend?

Let me summarize, if I may, a few judgments and conclusions.

China as a totality adds up to something radically different from our knowledge, experience, and concepts.

China is moving with great deliberation and careful planning in all areas—military, economic, and social. It is drawing on useful aspects of its heritage and obliterating the rest on the way to the New China. Western civilization has disrupted less advanced societies simply by the force and impact of its culture. In the case of China, we have a strong culture determined to go its own way, to assimilate what it wants of the West with the retention of its own identity and direction. China, by its own statement, is a developing nation faced with many decisions and many alternate courses of action.

It is important that we normalize relations to the greatest extent possible. At the same time we must remain alert to the fact that there are basic philosophical differences in our views of man and society. Yet within this context, it is possible for the United States and the People's Republic of China to co-exist peacefully.

I believe the trip by Senator MANSFIELD and myself adds greatly to our national understanding of China. The impending visit to China of the distinguished leaders of the House—JERRY FORD and HALE BOGGS can build more securely upon the good will established by the President, and advanced further, we believe, by our visit. It is my hope that more and frequent contact between our countries will come about including visits by my colleagues in the Senate.

Mr. President, I ask unanimous consent to have printed in the RECORD, first, an appendix citing the itinerary and the personnel with whom we had the most contact; and, second, another appendix containing a description, from Chinese sources, with which we found no reason to disagree, concerning the number of places we visited.

There being no objection, the material was ordered to be printed in the RECORD, as follows:

ITINERARY

CITIES

1. Peking (5 days)—April 18 to 23.
2. Shanghai (2 days)—April 24 to 25.
3. Hangchow (2 days)—April 26 to 27.
4. Sian (2 days)—April 28 to 29.
5. Changsha (1½ days)—April 30 to May 1; at Noon on May 1—Depart Changsha for Canton.
6. Canton (1½ days)—May 1 to 3; at 8:30 a.m. on May 3—Depart Canton by rail for Hong Kong.

SCHEDULE—WEDNESDAY, APRIL 19, 1972

For members of party who do not attend discussions:

A. 9:30 a.m.—Visit "Temple of Heaven."

B. 2:30 p.m.—Full Party; 1) Imperial Palace; 2) Exhibition of "New Archaeological Discoveries".

Dinner for full party:

A. 7:00 p.m.—Reception by Mr. and Mrs. Kuo-Mo-Jo at the "Great Hall of the People".

B. 7:30 p.m.—Dinner.

Discussions—10:00 a.m.

1. Chiao Kuan-Hua—Vice Minister of Foreign Affairs and Vice President of the Chinese People's Institute of Foreign Affairs.
2. Chang Wen Chin—Director of Division, Foreign Ministry.
3. Mr. Chou Chiu-yeh—Secretary General, People's Institute of Foreign Affairs.
4. Mr. Hu Hong-fan—Cultural Member of the "People's Institute."

SCHEDULE—THURSDAY, APRIL 20, 1972

Morning options:
1. Ching Hua University.
2. Petrochemical Factory.
3. A Middle School.

Afternoon:
Arts and crafts factory.

Evening:
Reception and dinner hosted by Premier Chou En-Lai.

SCHEDULE—FRIDAY, APRIL 21, 1972

All day excursion.
1. The Great Wall.
2. The Ming Tombs.

Evening:
White-Haired Girl.

SCHEDULE—SATURDAY, APRIL 22, 1972

Morning:
Physical Culture Institute.

Afternoon:
Kindergarten.
Obstetrics.
Carpet Factory.
Museums.

SCHEDULE—SUNDAY, APRIL 23, 1972

Morning:
Summer Palace.

Afternoon:
Open.

Monday, April 24, 1972: 8:00 a.m.—Leave for Shanghai.

PEKING DINNER WITH PREMIER CHOU EN-LAI

Prof. Chou Pei-yuan—Vice President of the Chinese People's Institute of Foreign Affairs, Vice Chairman of the Revolutionary Committee of Peking University.

Mr. Chiao Kuan-hua—Vice President of the Chinese People's Institute of Foreign Affairs, Vice Minister of the Foreign Ministry.

Mr. Hsieh Fu-ming—Member of the Standing Committee of the National People's Congress.

Mr. Chang Wen-chin—Director of Department of American and Western European and Oceanian Affairs of the Foreign Ministry.

Mr. Wang Hsiao-yi—Official in charge of the Foreign Affairs Group of the Peking Municipal Revolutionary Committee.

Miss Wang Hai-yung—Deputy-Director of the Protocol Department of the Foreign Ministry.

Mr. Hu Hung-fan—Council Member of the Chinese People's Institute of Foreign Affairs.

The first five persons in the above list and Mrs. Wang Ti-chen—Prof. Chou Pei-yuan's wife.

Mr. Chu Chuan-hsien—Deputy Director of the Protocol Department of the Foreign Ministry.

Mr. Wang Ch'iu-yeh—Director of Cultural Relics Administrative Bureau, State Council ("curator" of the Palace Museum).

Mrs. Cheng Chi-Lung—Council Member of Chinese People's Institute of Foreign Affairs.

PERMANENT PARTY—PEKING, CHINA

Chou Ch-iu-yeh—Secretary-General of the Chinese People's Institute of Foreign Affairs.

Hu Hong-fan—Council member of the Chinese People's Institute of Foreign Affairs.

Tan Hsing-po—Council member of the Chinese People's Institute of Foreign Affairs.

Yu Chien-chun—Staff of the Chinese People's Intitute of Foreign Affairs.

Wang Er Hang—Staff of the Chinese People's Institute of Foreign Affairs.

Chiao Shi-wu—Staff of the Chinese People's Institute of Foreign Affairs.

Chao Chi-hua—Staff of the Foreign Ministry of China.

Tzu Chung-yun—Interpreter.

Wu Chien-ta—Interpreter.

Chao Sheng—Interpreter.

Chao Feng-feng—Interpreter.

Present at the Shanghai Airport, April 24, 1972:

Mr. Feng Kuo-Chu—Council member in Shanghai of the Chinese People's Institute of Foreign Affairs.

Mr. Li Fu-hsun—Official in charge of the Foreign Affairs Group of the Shanghai Municipal Revolutionary Committee.

Mrs. Chiu Li—Chairman of the Shanghai Hongkou District Revolutionary Committee.

Mr. Chang Hsiang-tung—Deputy of the Third National People's Congress, Professor of the Institute of Physiology of the Chinese Academy of Sciences, Member of the Academy of Sciences.

Mr. Liu Ta-Jie—Member of the National Committee of the Chinese People's Political Consultative Conference, Professor of the Fu Tan University.

Present at the dinner the same evening in Shanghai:

Mr. Mai Tien-shui—Vice Chairman of the Revolutionary Committee on Shanghai Municipality.

(In addition of the above list)

Shanghai Monday, April 24, 1972:

Afternoon:
Shanghai Industrial Exhibit.
Children's Palace.
Evening:
Dinner hosted by Ma Tien-shui.
Tuesday, April 25, 1972:
Morning:
Malu Commune.
Afternoon:
Inspection of Shanghai Harbor by boat on the Huang Po River.
Evening:
Acrobatics performance.
Present at the Hangchow Airport, April 26, 1972:
Mr. Chou Feng—Council Member in Hangchow of the Chinese People's Institute of Foreign Affairs, Vice Chairman of Hangchow Municipal Revolutionary Committee.
Mr. Fang Ming—Official in charge of foreign affairs of Chekiang Provincial Revolutionary Committee.
Mr. Yang Chia-chun—Official in charge of cultural affairs of Chekiang Provincial Revolutionary Committee.
Mr. Hsu Yao-tung—Official in charge of foreign affairs of Chekiang Provincial Revolutionary Committee.
Mrs. Cheng Hsiu—Member of Chekiang Revoluntionary Committee in charge of women's affairs.
Wednesday, April 26, 1972:
8:30 a.m.—Leave Shanghai for Hangchow.
Hangchow—Morning:
Visit to Wu Hill for a view of the surroundings.
Afternoon:
Boatride and walk around West Lake.
Evening:
Dinner hosted by Hsien Cheng-hao.
Present at dinner in Hangchow, April 26, 1972:
Mr. Hsien Cheng-hao—Vice Chairman of Chekiang Provincial Revolutionary Committee.
Mr. Chou Feng—Council Member in Hangchow of the Chinese People's Institute of Foreign Affairs, Vice Chairman of Hangchow Municipal Revolutionary Committee.
Mr. Fang Ming—Official in charge of foreign affairs of Chekiang Provincial Revolutionary Committee.
Mr. Ni Yen-chiang—Official in charge of foreign affairs of Chekiang Provincial Revolutionary Committee.
Mr. Hsu Yao-tung—Official in charge of foreign affairs of Chekiang Provincial Revolutionary Committee.
Mr. Yang Chia-chun—Official in charge of cultural affairs of Chekiang Provincial Revolutionary Committee.
Mrs. Cheng Hsiu—Member of Chekiang Revolutionary Committee in charge of women's affairs.
Mr. Fang Yi-fei—Official in charge of foreign affairs of Hangchow Municipal Revolutionary Committee.
Mr. Lu Ho-sen—Staff member of foreign affairs section of Chekiang Provincial Revolutionary Committee.
Mrs. Shin Chih-ying—Staff member of foreign affairs section of Chekiang Provincial Revolutionary Committee.
Mrs. Chao Yun-hsia—Staff member of foreign affairs section of Chekiang Provincial Revolutionary Committee.
Thursday, April 27, 1972:
Morning: Shopping—Silk Factory, and arts and crafts exhibits.
Afternoon:
Tea factory.
Pagoda of the Six Harmonies.
Friday, April 28, 1972:
8:30 a.m.—Leave for Sian.
Sian—Afternoon:
Bell Tower.
Shensi Provincial Museum.
Evening:
Dinner hosted by Hu Wei.
Music and dance performance.
Saturday, April 29, 1972:
Morning:
Panpo neolithic village.
Hua Ching Gong Palace and Hot Springs.
Afternoon:
Arts and Crafts Factory.
Sunday, April 30, 1972:
8:30 a.m.—Leave for Changsha.
Changsha—Afternoon:
Number One Normal School—attended by Mao and at which he once taught.
Clear Water Pond—Mao's home while in Changsha.
Evening:
Dinner hosted by Li Chen-jun.
Monday, May 1, 1972:
Morning:
Yu Lou Hill.
Embroidery Factory.
11:30—Leave for Canton.
Canton—Afternoon:
Canton Trade Fair.
Evening:
Dinner hosted by Wang Shou-dao.
Tuesday, May 2, 1972:
Morning:
School for Deaf and Mute.
Afternoon:
Shih Wan porcelain factory.
Evening:
Farewell dinner hosted by the American group.
Wednesday, May 3, 1972:
8:20 a.m.—Leave by train for Hong Kong.
Sian—Li Kuang-jen—Vice Chairman of the Municipal Revolutionary Committee of Sian.
Mr. Kuo Fung-ning—Council Member, People's Institute of Foreign Affairs, Shensi Province.
Hu Wei (host-dinner)—Vice Chairman of the Revolutionary Committee of Shensi Province.
Changsha—Mr. Shang Tze-ching—Council Member, Chinese People's Institute of Foreign Affairs.
Mrs. Su Ming—Vice Chairman of Changsha Municipal Revolutionary Committee.
Mr. Li Chen-jun (host-dinner)—Vice Chairman of Human Provincial Revolutionary Committee.
Canton—Present at the Canton dinner, May 1, 1972:
Mr. Wang Shou-tao—Vice Chairman of Kwangtung Provincial Revolutionary Committee.
Mr. Shao Yen-sheng—Council Member in Kwangchow of the Chinese People's Institute of Foreign Affairs.
Mr. Yang Ke-chung—Responsible person in charge of foreign affairs of Kwangtung Provincial Revolutionary Committee.
Mr. Shang Eng-chuo—Deputy to the National People's Congress, Professor.
Madame Teng Chian—Responsible person of the Administration Office of the Kwangchow Municipal Revolutionary Committee.

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THE PARK OF THE TEMPLE OF HEAVEN

The Temple of Heaven used to be where the emperors of Ming and Ching dynasties worshipped heaven and prayed for good harvests. It was constructed in 1420 and covers an area of 273 hectares. The Temple has an inner and an outer surrounding walls. The main structures are all situated in the inner enclosure. To the south is the Huan Chiu Tan (Circular Mound Altar) and to the north, Chi Ku Tan (Altar of Prayer for Good Harvests). The two altars are 360 metres apart and are connected by a wide paved way, the Tan Pi Chiao (Red Stairway Bridge). They together form a perfect complex of structures. The main buildings are Chi Nien Tien (Hall of Prayer for Good Harvests), Huan Yu (Circular Mound) and Huang Chiung Yu (Imperial Heavenly Vault).

The Hall of Prayer for Good Harvests is a round hall with triple eaves and a gilded ball on the top. It was constructed in 1420, rebuilt in 1890 and repaired again in 1971. It is 38 metres high and 30 metres in diameter. It is a structure of bricks and wood, but without big beams or long cross-beams.

The Imperial Heavenly Vault was constructed in 1530, and the famous "Echo Wall" and the "Triple Echo Stones" are here.

The Circular Mound was erected in 1530. It is a triple-tiered terrace with white marble balustrades and was the altar on which the emperors used to worship heaven and pray for rain at the winter solstice.

After the liberation of Peking, great efforts have been made to repair the Temple of Heaven. Trees have been planted, orchards expanded and cultural pavilions opened. Now it is one of the biggest parks in Peking.

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THE GREAT WALL AT THE PATALING HILLS

The Great Wall is one of the grand works of architecture of ancient China.

In the 5th century B.C. in the Warring States Period some dukedoms and earldoms (feudal fiefs) built defensive walls on their own fiefs in order to ward off the attacks of neighbouring lords or Hsiung Nu (Huns). After the Chin dynasty (3rd century B.C.) unified China, these walls were linked up and expanded on a large scale, and later on extensions and consolidation work were made by successive dynasties, thus the present Great Wall came into being.

The Pataling Hills formed an outpost where the strategic Chuyungkuan Pass Gate was built in the Wan Li Chang Cheng (Ten Thousand Li Long Wall). From here the continuous Wall stretches to Shanhaikuan in the east and Chiayukuan in the west, a total length of 6,000 kilometres passing through 5 provinces and 2 autonomous regions in northern China. The average height of the Wall is 7.5 metres, its width 5.4 metres. There is a two storied tower every few hundred metres.

After liberation, the People's Government repaired the section of the Wall at the Pataling Hills and restored to its original magnificence.

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TING LING MUSEUM

Shihsan Ling (Ming Tombs) are situated about 50 kilometres to the northwest of Peking. They are the tombs of 13 emperors of the Ming Dynasty (1368–1644). Ting Ling (Ting Tomb) is the tenth and the tomb of Emperor Chu Yi-chun (1573–1620) and his two Empresses. The Underground Palace of Ting Ling was excavated after liberation in 1956 and 1957. It was the first underground construction to be excavated among the 13 tombs.

The main features of the Tombs are: the Ling En Hall, the Ming Tower, the Precious Wall and the Underground Palace, which is situated within the Precious Wall behind the Ming Tower. The Underground Palace covers a total space of 1,195 square metres and consists of five chambers, front, back, central, left and right, all of stone work without beams or pillars. The doors of the front, central and back chambers are made of marble with carved designs. The vault of the front and central chambers is 7.2 metres high and that of the left and right annex chambers 7.1 metres. In the middle chamber are emplaced three marble altars and three Dragon Urns used as Eternal Light Lamps. The back chamber is 9.5 metres high and housed the caskets.

The more than 2,000 burial articles found in the Ting Ling Underground Palace include gold, silver and jade articles, pieces of porcelain and lacqure ware, silk fabrics and clothing. They are displayed in two exhibition rooms.

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THE PALACE MUSEUM

The Museum used to be the imperial palace in the Ming and Ching dynasties, which was commonly known as the Forbidden City. It was first constructed from 1406 to 1420 (the 4th to the 18th reign year of Yung Lo of the Ming dynasty), and alterations and reconstructions were carried out later on

several occasions. The Palace now has a history of more than 500 years.

The Museum covers a total area of 720,000 square metres and has buildings comprising more than 9,000 room-units, which have a floor space of about 150,000 square metres. It is surrounded by wall over 10 metres high and a moat 52 metres wide. It is the biggest and best-preserved of ancient buildings now in China as well as a concentrated embodiment of the fine tradition and unique style of China's national architecture.

The Imperial Palace mainly consists of two parts: the front part, where the emperors of the Ming and Ching dynasties held major ceremonies, and the rear part where they dealt with state affairs and their empresses and imperial concubines lived and entertained themselves.

During the Ming and Ching dynasties the Palace was the centre of their political rule.

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THE PEKING PHYSICAL CULTURE INSTITUTE

The Peking Physical Culture Institute was founded in 1953, with the main task of training a backbone of physical culture workers.

The Institute occupies an area of 600,000 square metres (60 hectares) with a total building space of 64,000 square metres. It is divided into three areas, one for teaching and training, another the living quarters of the students and still another those of the teachers and staff members. The indoor facilities include three gymnasiums, two halls for table tennis, two for other ball games, one for field and track events, one for swimming, and one for weight-lifting. Outdoor athletic grounds number more than 60, including athletic fields, football courts, basketball courts, swimming pool and a militia shooting range.

It has now an office and teaching staff of over 560 and an enrollment of over 500.

The curriculum includes field and track training, football, basketball, volleyball, table tennis, badminton, swimming, gymnastics and Chinese shadow boxing. In addition, the Institute now runs short-term training classes on a trial basis to help train physical culture activists from factories, mines, people's communes and army units.

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SHANGHAI CHILDREN'S PALACE

The Shanghai Children's Palace is a centre for the children under the age of sixteen to carry out their extra-curricular activities. The palace often organizes the children to exchange their experience in the study of Chairman Mao's works, gives lectures on the situation both at home and abroad, invites veteran revolutionaries and model workers, peasants and soldiers to give reports on class education and education in revolutionary traditions, and arranges for the children to visit factories, people's communes, docks and places of revolutionary significance for the purpose of receiving education and making social investigations. It also guides the children in learning industrial and agricultural production and medical science, in carrying out various scientific and technical activities, such as doing astronomical observations, assembling radio-sets and making airplane and ship models as well as in joining literary and art and physical activities which include: learning to sing model revolutionary operas, dancing, music, painting, embroidery, Chinese traditional boxing, gymnastics and table tennis.

Through these activities the palace, in close co-ordination with the school, the family and society at large, educates the children in carrying on the revolutionary traditions and in serving the Chinese people and the world people whole-heartedly. By guiding the children in participation in the three great revolutionary movements of class struggle, the struggle for production and scientific experiment, the palace enables the children to develop morally, intellectually and physically and become workers with both socialist consciousness and culture.

About 2,000 children take part in various activities in the palace every day. These activities are carried out chiefly under the guidance of workers, peasants and soldiers in addition to some full-time instructors.

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SHANGHAI INDUSTRIAL EXHIBITION

The Shanghai Industrial Exhibition is a center where new products of Shanghai industry are displayed and new techniques exchanged. It consists of one multi-category exhibition hall and seven other halls with exhibits of the following categories—machine-building and electric machinery, metallurgy, chemical industry, meters and instruments and tele-communications equipment, light industry, textiles and handicrafts. Displayed at the exhibition are over 5,000 items occupying a total floor space of more than 10,000 square metres.

The exhibits (some of them are models) are the fruits gained by the working class of Shanghai who have acted on Chairman Mao Tsetung's teachings and displayed the revolutionary spirit of independence, initiative and self-reliance.

Following are the major ones:

300,000 kw. turbo-generator with inner water-cooled stator and rotor, digital process control machine tools equipped with electronic devices, 12,000-ton hydraulic free-forging press, big high precision thread grinding machine, laser automatic dynamic balance machine and 32-ton dump truck used for mines—all designed and manufactured by the Shanghai machine-building and electric machinery workers;

Semi-conductor materials, low-alloy steels, cold-drawn irregular-shaped steel tubes, high-temperature precision alloys and big vacuum refining furnace successfully produced by the Shanghai metallurgical workers with indigenous and modern methods;

Ocean-going ships built by the aspiring Shanghai ship-building workers, among which the 10,000-ton freighter *Feng Guang* and some other vessels were made on a small shipway previously used to build ships with a maximum of 3,000 tons only;

Electronic computer, video tape recorder, double focusing solid analysed mass spectrograph with the detection limits for impurity elements being as low as several parts per billion and various electronic elements of new types recently manufactured by the Shanghai workers in the meters and instruments and tele-communications industry;

New achievements in multi-purpose use of waste water, gas and residue, engineering plastics, effective traditional Chinese medicinal herbs, antibiotics and stimulant "920" for agriculture made by the Shanghai workers in the chemical industry;

Wrist watches, cameras, sewing machines, bicycles and all sorts of cotton, silk and woolen fabrics produced by the Shanghai workers in the light and textile industries;

Carvings in ivory and jade stones and woolen needle-point tapestry elaborately worked out in a Chinese national style by the Shanghai handicraftsmen.

The exhibition also gives a picture of the new achievements in the making of synthetic insulin, application of acupuncture anesthesia, replantation of several limbs and treatment of extensive burns.

New additions and replacements of exhibits are made from time to time. Most of the articles here have been designed and produced since the beginning of the Great Proletarian Cultural Revolution.

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EXHIBITION OF HISTORICAL RELICS UNEARTHED DURING THE GREAT CULTURAL REVOLUTION

During the Great Proletarian Cultural Revolution, Chinese archaeological workers have unearthed a large number of historical relics with the support and participation of workers, peasants and soldiers. On exhibition here are about 1,700 pieces of historical relics selected from those excavated in nine provinces, one city and one autonomous region.

This group of historical relics ranges from tools of production, household utensils and works of art of the primitive society of 4,000 years ago to precious funerary objects from tombs of the imperial families of the Ming dynasty of 500 years ago. Among these the most outstanding are:

Two suits of "garments made of jade pieces threaded with fine gold wire" worn by Liu Sheng, the Prince of Chungshan, and his wife of the Western Han dynasty (2nd century B.C.);

A whole procession of bronze carts and horses of the Eastern Han dynasty (2nd century);

Gold, silver and jade articles of the Tang dynasty (8th century);

Silk fabrics, manuscripts and books, and various articles of daily use and foodstuffs of the 5th–8th centuries, unearthed along the "Silk Road", the main line of communication between China and the West in those times;

Paintings of the Sung dynasty (12th century), woodblock-printed books of the Yuan dynasty (13th century) and articles of daily use of the Prince of Lu, Ming dynasty (14th century), discovered in his tomb.

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THE SIAN ART HANDICRAFTS WORKSHOP

The Sian Art Handicrafts Workshop was set up in 1964. There are now more than 200 workers and staff members. The chief products are inlaid lacquer ware and ivory and shell carvings. These products present the traditional designs of flowers, birds and scenery as well as designs with a new socialist content. With the Great Proletarian Cultural Revolution, we have further carried out the revolutionary line and policy for literature and art: *"Literature and art should serve the workers, peasants and soldiers"* and *"Let a hundred flowers blossom; weed through the old to bring forth the new"*, and new products have greatly increased depicting Chairman Mao's revolutionary practice, presenting heroic images of workers, peasants and soldiers and reflecting socialist revolution and socialist construction. The newly created products, such as "Chairman Mao arrives in Yenan", "Long live the Yenan Spirit" and "The White-Haired Girl", are greatly appreciated by the broad masses of the people. At the same time, we have continued to create products with flowers, birds, scenery and ancient figures as their themes.

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THE SHENSI PROVINCIAL MUSEUM

The Shensi Provincial Museum is a historical museum mainly for the study and display of antiquities.

There is a wealth of antiquities above and under ground in the Shensi area as eleven of China's feudal dynasties located their capitals here. But before liberation, many of the relics were damaged or looted by landlords, compraders, warlords and imperialists. Since liberation, this museum has excavated and collected large numbers of precious antiquities in coordination with the progress of capital construction projects.

Two sections of the museum are now open to the public, "the forest of tablets" and "the stone carvings room".

"The forest of tablets", founded in 1090, is the oldest and richest collection of stone tablets in China. On display are more than 1000 tablets, most of them propagating feudal culture. Some of the tablets reflect the acute class struggle in ancient Chinese society, and some provide precious data for the study of Chinese history and the history of cultural interflow between China and foreign countries. They are also a treasure house of Chinese calligraphy.

Exhibited in the stone carvings room are

more than 70 pieces of sculpture ranging from 2nd century B.C. to 8th century A.D. They form the richest indoor collection of ancient sculpture in China, which is an integral part of the magnificent ancient Chinese culture.

THE TAYEN PAGODA

The Tayen (Big Wild Goose) Pagoda was built in 652 A.D. in Tang dynasty and has a history of over 1,300 years. A fine example of the architectural art of the working people of ancient China, it is 64 metres high and has seven stories.

Before liberation, the staircase and floor boarding in the pagoda were broken and became rotten. The base of the pagoda tipped and its surroundings were badly neglected. What is more, Kuomintang reactionary troops once made it their barracks and dug trenches around it, giving it serious damage.

After liberation, the People's Government had repairs made in 1954 and trees planted, so that the pagoda's original magnificent look is now regained and preserved, and it has become a holiday resort of the working people.

THE BELL TOWER

The Bell Tower was originally constructed in 1384 A.D. (17th reign year of Hungwu of Ming Dynasty) at the crossing of the Hsita Chieh and the Kuang-chi Chieh streets, opposite to the Drum Tower. It was rebuilt at the present site in 1582 (10th reign year of Wanli of Ming Dynasty), and renovated in 1739 (5th reign year of Chienlung of Ching Dynasty). It has a history of nearly 600 years. In old times, a big bell hung in the tower for the announcement of time, hence the name.

The tower is 36 metres high. Its base is 8.6 metres in height, covering an area of 1,377.64 square metres. The tower body is built of brick and wood. It is beautifully shaped, with a superimposed ribbed roof and terraced eaves, each with supporting structure. It is one of the magnificent old structures of national style in Sian, which fully shows the infinite talents of the working people of old times and the characteristic style of Ming architecture.

During the Kuomintang reactionary rule, the tower became badly out of repair, being used as barracks and repeatedly damaged. At one time, it was even made a prison for the detention of progressives and revolutionary youth. Since liberation, under the leadership of the Party and Government, this ancient building has been repaired, with its base consolidated, its staircase and most of the pillars and beams reinforced or replaced, and its outside repainted and gilded, thus recovering its original look.

HUACHING HOT SPRING

Huaching Hot Spring is situated at the foot of Lishan Hill, 25 kilometres east to the city of Sian. It has been a famous scenic spot since ancient times.

Lishan Hill is an extension of the Chinling Mts, 1, 1,250 metres above sea level. It is overgrown with pines and cypresses and looks like a black horse, hence it name ("Li" in Chinese is the name of a black horse). According to historical records, the hot spring at the foot of the Hill was discovered more than 2,800 years ago. There are now four spring holes with a total flowing volume of 112.5 tons an hour. The water is 43 C in temperature and contains 9 minerals including lime, sodium sulfate, manganese carbonate and sodium carbonate. It is good for bathing as well as for curing arthritis and skin diseases.

For thousands of years, the Huaching Hot Spring was a resort of feudal emperors. During the dark days of Chiang Kai-shek's rule, there were only a few incomplete constructions here, which were owned by bureaucrat-capitalists, while the labouring people could never dream of coming here. After liberation, in order to meet the needs of the broad masses of the people, the people's government undertook repeated repairs and reconstruction, digging new springs, building new houses, expanding the baths and planting trees. The spa covers an area of 62,193 square metres and has the capacity of more than 350 people bathing at the same time. It has become a holiday resort and sanatorium for the masses of workers, peasants and soldiers.

The well-known Sian Incident in the modern Chinese revolutionary history also took place here.

THE PANPO MUSEUM

The Panpo Museum is situated to the north of Panpo Village on the east bank of the Chan River in the eastern suburb of the city of Sian.

Here is the site of the remains of a fairly complete matriarchal clan commune village of more than 6,000 years ago, typical of those in the Yellow River region. The remains cover an area of 50,000 square meters, and comprise an area of living quarters, a pottery-making centre and a graveyard. They were discovered in the spring of 1953, and after five scientific excavations a total area of 10,000 square meters has been cleared up, uncovering rich scientific data. The Museum, first of its kind in our country, was established on the site of the ruins in 1958.

The implements used by the Panpo men were mainly made of stone or bone, such as stone axe, chopper, arrowhead, fishing net weight, spinning wheel, and bone needle, fish hook harpoon head. The Panpo men engaged mainly in agriculture, but also in other productive activities: hunting, fishing, animal husbandry and pottery-making.

During their long practice of production and social life, the Panpo men carried out the artistic activities of painting, sculpture and making ornaments. Their painted pottery drew its themes from objects of their labour and from nature. They invented the pottery steam cooker, the eyed stone axe and the barbed fish hook and harpoon head. They also mastered the principle of centre of gravity in making the sharp-bottomed jug.

In the hall is kept part of the remains of the primitive village, about 3,000 square metres in area. There were two types of dwellings, the half-sunk basement and the above-ground wooden house, round or square in shape. All the doors faced south, and in the middle of the dwelling was a pit for fire. The chief building materials were turf and wood. Beside the houses were a number of cellars for storage. Round the living quarters there was a ditch 5–6 metres wide and deep for the protection of the village.

Mr. RANDOLPH. Mr. President, will the Senator from Pennsylvania yield?

Mr. SCOTT. I yield.

Mr. RANDOLPH. Is it appropriate to ask questions—I was not here earlier——

Mr. SCOTT. We welcome questions, and I am glad to answer any.

Mr. RANDOLPH. If this question has been answered, I will understand, but I want to make inquiry about it now.

As to the people of China, what knowledge had they of the visit of the two leaders from the Senate to their country?

Mr. SCOTT. Well, that is a question we asked ourselves throughout the trip—and since. Obviously, it was evident, in view of the nature of our physiognomies that we were strange genre to most of the Chinese who, in the spirit of their relative isolationism, have not seen too many westerners. If they have seen westerners, they may well have been Germans, Rumanians, Albanians, or some other nationality.

As I noted, we appeared on television with Premier Chou En-lai in Peking. We saw articles with photographs of our appearance in the Peking Peoples Daily. We were told by our local hosts—and the local host was usually the Vice Chairman of the Provincial or the City Revolutionary Committee—that the reports of our visit appeared in their newspapers.

We attracted, as I said, enormous curiosity from the Chinese, particularly on the streets. We walked about freely on the streets. We went where we wanted to go within the cities. The best estimate is that they undoubtedly knew we were westerners and, some of them could not help knowing that we were Americans because they had seen us on television and read about us in the newspapers. It is natural for anyone to say, including the Chinese, "Who are those guys?"—as we would say if we saw a large delegation from another country. So we think that the fact they knew we were Americans applied to a relatively limited number of people, but the fact that we were westerners applied, I think, to everyone.

In most cases, in my mind, I do not believe that the demonstrations of applause for us could have been staged. For instance, when we went into a handicraft shop of arts and crafts, it did not escape my practiced eye that one worker would be working in jade, another one in malachite, another on ivory, and another on rose quartz. That is not the way in which a line works. Many of the group of workers would be working on malachite or some other similar stone. They had undoubtedly done this for our benefit, as we would do in this country, to show representative samples of the work they expected.

And when they applauded, I assume it was because they were told that it was good manners to applaud the visitors. When they applauded us, we would always applaud back. That was staged, but it was staged for our benefit so that we could see much more in a shorter time and not have to go through every room in the plant.

The children here put on a show very much like this for those visiting Public School 83 today. Someone recites. Someone dances.

They sung a song about washing clothes for the benefit of each other, to serve the people. There was a Maoist theme behind it. This was done because they knew that we were coming. And they applauded us. We were very much impressed when the children appeared at the door of the school after hours and took Mike Mansfield and Hugh Scott by the hand and led them into the classroom. This was all staged. It was very well done.

There would be the same kind of demonstration put on in Public School 83 at home.

On the other hand there was a lot of spontaneous reaction that could not possibly have been staged. For example, we would go through a public park, I made it a point to go somewhere else and disappear. So did two or three others. We would go where there was no Chinese host or interpreter. If we went down a little path here the children were playing ping-pong or yoyo, or a little game

called devilo, they would stop what they were doing and applaud us. Whether they knew that we were Americans or westerners is beside the point.

The point is that it could not have been planned. This happened in the country. Where we went with previous notice, it could be planned. But where we went without previous notice and went our own way, there was a spontaneity about it.

What does it mean? It means the Chinese were glad to see visitors and liked us. And they may not have known who we were.

Mr. RANDOLPH. Mr. President, I express a personal and, in a sense, an official appreciation for the journey that the Senate leaders have made to this foreign country that has such complex problems annd such potential.

Mr. President, I have long been a believer in the fact that such contacts as the ones we are having a report on this afternoon are constructive. I hope that these contacts can be increased, not only by the members of the Federal Government, the diplomatic corps, the executive and legislative branches, but, also, so that Americans at many levels can visit Peking and the Republic of China, just as I hope earnestly that the people of that country can visit the United States.

Mr. SCOTT. Mr. President, I thank the distinguished Senator from West Virginia, and I agree with him.

Mr. JAVITS. Mr. President, will the Senator yield?

Mr. SCOTT. Mr. President, I yield to the distinguished senior Senator from New York.

Mr. JAVITS. Mr. President, I was not present when the majority leader spoke. However, I want very much to spread on the RECORD the fact that throughout the visit of the majority and minority leaders of the Senate to China, I was impressed and I believe all Americans were impressed at the dignity with which they acted. I was impressed by their very restraint, their great courtesy, and their conduct which illustrated to my mind the most gracious of the American qualities. That is reflected in these reports.

I rise to express deep gratification that Americans can do so well for our country in the delicate role and touchy situation both leaders faced at the time of this visit.

Mr. SCOTT. Mr. President, I thank the Senator from New York for his very felicitous remarks.

Mr. SAXBE. Mr. President, I join in the comments of my colleagues. I think the visit of the majority and minority leaders to China displayed diligence as they went to this mission. And I think the reception afforded them and the reports rendered by them indicate that their mission was successful.

I have one question. Does the minority leader feel the Chinese hit upon the one method that involved with fervor the tremendous number of people in that country? In other words, the normal method would not have permitted the total involvement of the people in the country because of their great number. It seems to me that the emphasis on individual involvement might be the answer that many of our overcrowded countries might look to.

Mr. SCOTT. There is a political science phrase, "The genius of the people." It does not mean the brilliance of a single man. It means the feeling of the people for a particular situation. I think it is the genius of the Chinese people that, for these days and times, they have found a way to get everybody working and pulling together.

I do not know whether it is the best system even for them. The risk of the system is that they have put all their eggs in the Mao basket. They have put all of their cohesiveness behind the grain feature. They have denied and yet adopted Confucianism in the form of Mao Tse-tung. When Mao passes, can they make an easy transition from "as Mao teaches" to "as Mao has taught us."

They lived for centuries under the dictum "as Confucius said." They may do it. They are peculiarly fitted to follow through on the Maoism as they have on Buddhism and Confucianism. If any people can make a political credo last a long time, I believe they can.

The genius of the overseas Chinese, as we know, is demonstrated in their ability in private enterprise. They are natural businessmen. They succeed. Their children are well behaved, as we noted in China. There is a discipline about them. There is not the criminal element among the Chinese there or among the Chinese of any other country. They are self-sustaining, self-sufficient, and good citizens. They have taken all of this genius toward success of the overseas Chinese and turned it inward toward a philosophy of mutual self-reliance or joint struggle or a common determination to move from a very backward situation to a considerably better situation.

That at least is working. As I said, what happens after Mao is another question. I do believe that this inward commitment to devotion to Mao's thought is a form of regimentation, a programing, or a computerization by which they could program on toward something else, too. However, I see no evidence of any change in the program from nonaggression, for example, to aggression.

I see no evidence that they do want to be a superpower, yet I think they are going to be a superpower. I think their view of superpower is that it may happen to them and they hope it does not. They are determined to be the champion in the world of the small guy, and they have themselves quite a commodity, they think, if they can sell it.

Mr. SAXBE. The Senator felt there was no aimless busyness?

Mr. SCOTT. No, there is use of manpower. For instance, in Canton there are three rice harvests a year. They point out that where they have adequate manpower and womanpower they use it to complete the harvest, but wherever they are short of adequate manpower and womanpower, they use mechanical processes in the rice sowing and rice harvesting. Not having enough equipment for everybody to use it, they say where they do not have manpower, they use mechanical equipment. In America we have mechanical equipment at all times, and the Senator knows what happens to the manpower.

Mr. SAXBE. I thank the Senator.

Mr. DOLE. Mr. President, will the Senator yield?

Mr. SCOTT. I am happy to yield to the Senator from Kansas.

Mr. DOLE. Mr. President, I want to add my commendation to the distinguished majority leader and the distinguished minority leader for their efforts and diligence, and of course, for their report to the Senate and the people of America. I believe it is most helpful to those of us who have not had the opportunity, and many of us are probably in a class that hope someday to visit mainland China.

I share the views expressed earlier by the distinguished majority leader that the visit to Peking by President Nixon has, in effect, opened the door. That door may be a little wobbly today, but it did open. The same thought is expressed by the distinguished minority leader.

Knowing the answer, it is my understanding, of course, that China has more or less a closed society. I wish to ask the Senator, with reference to what we are seeing in Washington today with criticism of our leaders, and demonstrations, was there any of this in Peking? Did the Senator see any demonstrations or hear anybody criticize Chairman Mao or was there anybody on the capitol steps, or the steps of whatever their principal building is?

Mr. SCOTT. I would say to the Senator that demonstrations seem to be farthest from their minds and criticism farthest from their mouths. I not only saw no demonstrations, I did not expect to see them. I think this is a closed and ordered society. There was a period where the Red guards ran definitely amok and I am sure that among some of the people we met there were people who were reeducated through this system, in the so-called May Seven Schools of Reeducation, for example. But I would not expect within China anybody would criticize the leadership.

Mr. DOLE. More than once.

Mr. SCOTT. More than once; or that they would criticize the leadership if they wanted to enjoy it any more whatsoever.

Mr. DOLE. My point is that theirs is a closed society and ours is an open society. I believe that as both distinguished leaders have indicated, at least we have begun a dialog which may bring about visits by others and perhaps visits to America by leading Chinese, and that we are at a point of beginning.

I have read with interest about acupuncture. Did the Senator try that while he was there?

Mr. SCOTT. I am rather proud of my cowardice. I did not engage in any acupuncture myself.

Mr. MANSFIELD. We saw some.

Mr. SCOTT. Yes, we had some experience about it. My own acupuncture has been confined to needling my colleagues. I do comment en passant that I regard the forthcoming National Democratic Convention as a process in acupuncture whereby they will needle each other to a point of anesthesia extending, perhaps, to the general public. But that it not the kind of acupuncture we saw over there.

I do believe seriously there is widespread dissent, disagreement, and argument among the active leaders of the

Communist Party, but I think it takes place behind closed doors. They made quite a point of the fact that they do disagree and are not monolithic in their thinking, but when a consensus is arrived at, everybody is expected to follow the consensus.

Mr. DOLE. Again I thank the distinguished majority leader and the distinguished minority leader for their support.

Mr. SCOTT. Mr. President, I close with an anecdote I specifically cleared with the Premier. He pointed out visits made to China by a number of prominent former leaders of various nations who had held high office in their countries, and he had said to them:

But I wonder why you did not visit us while you were in office.

He expressed particular pleasure that Senator MANSFIELD and I had shown the desire to visit them while we were still in office. That I think helped to make it possible to suggest that other Members of Congress, while still in office, may visit over there with the Premier, being especially aware of the fact there is a greater honor to visit China while still in office rather than to wait until you are out of office, and having nothing else to do.

I thank all Senators who participated.

Mr. MANSFIELD. All I want to say to the distinguished Republican leader is that he presented the situation well. It was a pleasure to be with him and Mrs. Scott.

On the basis of our 16 days in this great, huge country that we did learn something, we hope that we were able to be of benefit to our own country, and on the basis of equality to bring about a better understanding between our two nations.

Mr. SCOTT. I thank the Senator.

Mr. COOPER. Mr. President, will the Senator yield?

Mr. MANSFIELD. I yield.

Mr. COOPER. Mr. President, I want to say that because of a conference I was not able to hear the report of the distinguished majority leader, but I will read it. I did hear the greater part of the report of the Senator from Pennsylvania.

I join my colleagues in saying I think we owe them a great debt because of their observations and study upon which they are able to make to us a report which is revealing and helpful.

I know there are great differences between these two societies. The more one studies them I think these differences become more obvious. But efforts have been made by the President. I hope it will enable us to live together even though we have wholly different systems.

I would like to join the Senator from New York (Mr. JAVITS) in saying we have admired the dignity, courtesy, and restraint with which the Senators have conducted themselves in the People's Republic of China, although it is no surprise to us. But it does reflect so well upon this country. Your example might be followed more and more by those of us who travel in other countries and find ourselves in similar positions. We have had a good example given to all of us. We are very grateful for your work.

Mr. SCOTT. I want to thank the distinguished Senator.

Mr. MANSFIELD. Mr. President, I wish to join in thanks to the Senator.

Mr. PERCY. Mr. President, the minority leader's excellent report on his trip to China expands our knowledge of today's China and contributes to our understanding of living conditions in the People's Republic. He has made a fine distinction between an acceptable standard of living in the West and a standard of living acceptable to the Chinese after generations of deprivation.

The minority leader's descriptions of an agricultural commune. handicraft factories, and the Peking General Petroleum Chemical Works are all very useful in helping us to judge methods, capabilities and motivations. He also casts light on the damage caused by the cultural revolution to Chinese higher educational institutions, and states the inadequacies of secondary education in China.

I agree with the minority leader's conclusion that the United States should seek further to normalize relations with China. The trip of the leadership, with the insights and information gained through dozens of conversations—not only with China's leaders but also with people in many walks of life—is another example of the value of open communications between peoples of different backgrounds and cultures.

Mr. ROBERT C. BYRD. Mr. President, I wish to add my commendations concerning the reports that have been delivered to the Senate today by the distinguished majority leader and the distinguished minority leader in respect of their recent journey to mainland China.

I listened carefully to the entire report of the majority leader. I was called off the floor during the report of the minority leader, but it is my intention to read the report that was delivered by the distinguished minority leader, and I intend to reread the statement of the distinguished majority leader. I hope all Senators will read these reports, especially those Senators who were not able to be present in the Chamber at the time the two leaders were speaking. I think that the reports not only were interesting and informative but also can be very useful to all Senators and to other Government officials and the American people.

I feel that the President's mission to mainland China recently was very useful and that it paved the way for the opening of a continuing dialog and line of communication between that great country and our own. I believe that such continuing communications can be helpful to both the Chinese people and the American people in bringing about a better understanding between our two countries and in opening an era of cooperation.

The followup visit by the two distinguished Senate leaders was most appropriate and served to widen the opened doors made possible by the preceding trip to the Republic of China by the President of the United States. I know of no men who would have been more capable or better equipped for such a followup journey than were the two distinguished leaders of this body. They have a wide knowledge of Chinese history and a longtime and abiding interest in the Chinese people. I feel that with their natural warmth, with the great knowledge they both possess, and with their genuine sincerity, which is always evident in their every word and action, our two leaders were admirably prepared for this journey. I have no doubt that their charm was felt warmly by their hosts, and I am delighted with their reports.

I hope that others in this body may be able to visit the Republic of China from time to time, so that we may continue this dialog and may be able to broaden the areas of communication and trade, in order to achieve, in the long run, the kind of warm understanding, mutual respect, and cordial relations that we have so long missed with that great country and its great people.

So, Mr. President, I thank our majority leader and our minority leader for the useful and comprehensive reports they have submitted today. I congratulate them on a job well done, and I join other Senators in welcoming them and their gracious wives back home.

## APPOINTMENT BY THE VICE PRESIDENT

The PRESIDING OFFICER. The Chair, on behalf of the Vice President, pursuant to Public Law 86–380, appoints the Senator from Illinois (Mr. PERCY) to the Advisory Commission on Intergovernmental Relations, vice the Senator from South Dakota (Mr. MUNDT) resigned.

## MESSAGE FROM THE HOUSE— ENROLLED BILLS SIGNED

A message from the House of Representatives, by Mr. Hackney, one of its reading clerks, announced that the Speaker had affixed his signature to the following enrolled bills:

S. 1379. An act to authorize the Secretary of Agriculture to establish a volunteers in the national forests program, and for other purposes; and

H.R. 13334. An act to establish certain positions in the Department of the Treasury, to fix the compensation for those positions, and for other purposes.

## VIETNAM—THE ONE DECISIVE ACTION NEEDED IS U.S. WITHDRAWAL

Mr. PELL. Mr. President, the events of the past 6 weeks in Southeast Asia can be viewed only with dismay by those who seek an end to the violence and death in Indochina.

The massive offensive by the North Vietnamese forces, who bear a heavy responsibility in this regard, the extension and intensification of bombing and naval bombardment by the U.S. forces, and now the mining of North Vietnamese ports—these events have shattered any illusion that this never-ending war is winding down.

And these events have only reinforced my longstanding conviction that we should set a firm and early date for complete withdrawal of our forces from South Vietnam, contingent only upon

the release of American men held as prisoners and an accounting for those missing.

I believe such a course is in the best interests of my country; I believe this is what the overwhelming majority of the American people want; and I shall continue to support, as I have in the past, every reasonable legislative effort in the Senate to achieve that goal.

I also believe some sort of asylum should be arranged for those South Vietnamese that would suffer as the result of our withdrawal.

The actions ordered by the President this week are indeed bold. But the vast expansion of bombing and bombardment, the mining of North Vietnamese waters, and the threat to interdict coastal shipping, also carry serious risks of dangerous confrontation and further escalation.

And what is to be gained? The prospects that these new military moves will effectively halt the flow of war supplies, or force the North Vietnamese Government to accept terms it has previously rejected, are regarded by objective observers as slim and slight.

I do commend the President for one significant and important change in policy. The terms proposed by the President for withdrawal of U.S. forces represent a significant improvement in the U.S. position. The proposal to withdraw all U.S. forces within 4 months of an internationally supervised cease-fire, contingent upon release of prisoners, moves the administration much closer to the position long propounded by those of us who have sought an early end to U.S. involvement in this war.

But I believe it is most unfortunate that the President chose to wield a club of military escalation with one hand, while offering a plan for U.S. withdrawal with the other. We should certainly have learned by now that the North Vietnamese, after fighting for 25 years in great hardship for what they believe is right, will not be bullied, bombed, or blockaded into a settlement not of their liking. I regret that the North Vietnamese have rejected the President's terms—but the rejection is scarcely surprising.

Mr. President, the bombing and mining by U.S. forces has been described by the President as a "decisive" military action, and the dictionary says decisive means "final, and conclusive." But the landscape of Vietnam is littered with the remains of past campaigns, strategies, and actions that were described as decisive.

The Cambodian campaign 2 years ago, in which U.S. forces surged across the border into Cambodia, was described as decisive. The object of that campaign was to insure the success of the administration's Vietnamization program by sanitizing the North Vietnamese sanctuaries. How decisive that campaign was can be seen in the fact that the North Vietnamese are now reestablishing those sanctuaries.

The Cambodian campaign has been followed by a series of major, bold, and presumably decisive military actions—the foray into Laos, the resumption of bombing of the north, and now the wholesale bombing and mining.

And along each step of the way we were assured by administration spokesmen that Vietnamization was a success. As recently as early this year, the American people were told that North Vietnamese forces might stage a little spectacular, but we were assured that the enemy no longer had the ability to mount a major offensive in South Vietnam.

To a great extent the American people have accepted these assurances, but the events of the past 6 weeks, I believe, have badly shaken the confidence of the American people in the promises, pledges, and predictions of the administration in regard to Southeast Asia.

After 3 years of Vietnamization, at a cost of billions of dollars and the lives of 20,000 American men, we are now told that we must undertake another decisive escalation to assure the safety of the 69,000 men remaining in South Vietnam. And in recent weeks 20,000 or more American men have been dispatched to Southeast Asia to provide the manpower for our increased air and naval activities there.

Mr. President, I believe there is just one decisive action the American people now want—an end to the killing. And that would be accomplished by the decisive withdrawal of U.S. Forces from South Vietnam by a definite date, contingent only on release of American prisoners of war. I would hope, too, some sort of asylum would be arranged for those South Vietnamese who would suffer as the result of our withdrawal.

I urge the President to take that decisive step. It would be a true act of courage and statesmanship, that would do far more for the prestige of our country and the Presidency than additional bold and risky acts of escalation.

The South Vietnamese Government now has a fighting chance to make it on its own, and to defend its territory, if that Government has the will and the leadership to mobilize the support and determination of the people of South Vietnam. Clearly, there is little more that we can do for them, short of again assuming the burden of ground combat. There is little more we can do for them without placing in jeopardy national interests and national goals that are far more vital to the United States than the survival of the inept, corrupt, and unrepresentative Thieu government.

## ORDER OF BUSINESS

The PRESIDING OFFICER. The Senator from Massachusetts is recognized.

(The remarks of Mr. BROOKE when he introduced S. 3601 are printed in the RECORD under Statements on Introduced Bills and Joint Resolutions.)

## FOREIGN RELATIONS AUTHORIZATION ACT OF 1972

The PRESIDING OFFICER. Under the previous order, the Chair lays before the Senate the unfinished business, which the clerk will read by title.

The assistant legislative clerk read the bill by title, as follows:

A bill (S. 3526) to provide authorizations for certain agencies conducting the foreign relations of the United States, and for other purposes.

Mr. ROBERT C. BYRD. Mr. President, what is the pending question before the Senate?

The PRESIDING OFFICER. Amendment No. 1187, as modified.

Mr. ROBERT C. BYRD. I thank the distinguished Presiding Officer.

## ORDER FOR VOTE ON AMENDMENT NO. 1187, AS MODIFIED, ON TUESDAY NEXT, MAY 16, 1972, AT 2 P.M.

Mr. ROBERT C. BYRD. Mr. President, having been directed to do so by the distinguished majority leader, and having cleared the request with various Senators, including Mr. CHURCH, Mr. STENNIS, and the distinguished Republican leader, I ask unanimous consent that a vote occur on the pending amendment by the junior Senator from West Virginia, No. 1187, as modified, on Tuesday next at 2 p.m.

The PRESIDING OFFICER. Without objection, it is so ordered.

## ORDER FOR ADJOURNMENT UNTIL MONDAY, MAY 15, 1972

Mr. ROBERT C. BYRD. Mr. President, I ask unanimous consent that when the Senate completes its business today, it stand in adjournment until 10 o'clock a.m. on Monday.

The PRESIDING OFFICER. Without objection, it is so ordered.

Mr. ROBERT C. BYRD subsequently said: Mr. President, I ask unanimous consent that when the Senate completes its business today, it stand in adjournment until 12 noon on Monday next.

The PRESIDING OFFICER. Without objection, it is so ordered.

## ORDER FOR ADJOURNMENT FROM MONDAY NEXT TO TUESDAY, MAY 16, 1972, AT 10 A.M.

Mr. ROBERT C. BYRD. Mr. President, I ask unanimous consent that when the Senate completes its business on Monday, it stand in adjournment until 10 o'clock a.m. on Tuesday next.

The PRESIDING OFFICER. Without objection, it is so ordered.

## ORDER FOR PERIOD FOR TRANSACTION OF ROUTINE MORNING BUSINESS ON TUESDAY NEXT AND THAT UNFINISHED BUSINESS BE LAID BEFORE THE SENATE AT CONCLUSION THEREOF

Mr. ROBERT C. BYRD. Mr. President, I ask unanimous consent that on Tuesday next, immediately after the two leaders have been recognized under the standing order, there be a period for the transaction of routine morning business for not to exceed 30 minutes, with statements therein limited to 3 minutes, at the conclusion of which the Chair lay before the Senate the unfinished business.

The PRESIDING OFFICER. Without objection, it is so ordered.

## TIME LIMITATION ON AMENDMENT NO. 1187, AS MODIFIED

Mr. ROBERT C. BYRD. Mr. President, I ask unanimous consent that on Tues-

day next, time on the pending question, amendment No. 1187, as modified, begin running at the close of morning business and that time for debate thereon be equally divided between and controlled by the junior Senator from West Virginia and the Senator from Idaho (Mr. CHURCH).

The PRESIDING OFFICER. Without objection, it is so ordered.

## ORDER FOR RECOGNITION OF SENATOR PEARSON ON MONDAY NEXT

Mr. ROBERT C. BYRD. Mr. President, I ask unanimous consent that on Monday, after the two leaders have been recognized, the distinguished Senator from Kansas (Mr. PEARSON) be recognized for not to exceed 15 minutes.

The PRESIDING OFFICER. Without objection, it is so ordered.

## ORDER FOR PERIOD FOR TRANSACTION OF ROUTINE MORNING BUSINESS ON MONDAY NEXT

Mr. ROBERT C. BYRD. Mr. President, I ask unanimous consent, that, following the remarks of the Senator from Kansas (Mr. PEARSON) on Monday, there be a period for the transaction of routine morning business for not to exceed 30 minutes, with statements therein limited to 3 minutes.

The PRESIDING OFFICER. Without objection, it is so ordered.

Mr. ROBERT C. BYRD. Mr. President, I suggest the absence of a quorum.

The PRESIDING OFFICER. The clerk will call the roll.

The second assistant legislative clerk proceeded to call the roll.

Mr. ROBERT C. BYRD. Mr. President, I ask unanimous consent that the order for the quorum call be rescinded.

The PRESIDING OFFICER. Without objection, it is so ordered.

## AUTHORITY FOR THE VICE PRESIDENT, THE PRESIDENT PRO TEMPORE, AND THE ACTING PRESIDENT PRO TEMPORE TO SIGN DULY ENROLLED BILLS AND JOINT RESOLUTIONS DURING THE ADJOURNMENT OF THE SENATE

Mr. ROBERT C. BYRD. Mr. President, I ask unanimous consent that during the adjournment of the Senate over until Monday next, the Vice President, the President pro tempore, and the Acting President pro tempore be authorized to sign duly enrolled bills and joint resolutions.

The PRESIDING OFFICER. Without objection, it is so ordered.

## AUTHORITY FOR THE SECRETARY OF THE SENATE TO RECEIVE MESSAGES FROM THE HOUSE OF REPRESENTATIVES DURING THE ADJOURNMENT OF THE SENATE

Mr. ROBERT C. BYRD. Mr. President, I ask unanimous consent that during the period of the adjournment the Secretary of the Senate be authorized to receive messages from the House of Representatives.

The PRESIDING OFFICER. Without objection, it is so ordered.

## AUTHORITY FOR COMMITTEES TO FILE REPORTS UNTIL 5 P.M. TOMORROW

Mr. ROBERT C. BYRD. Mr. President, I ask unanimous consent that committees be authorized to file reports until 5 p.m. tomorrow.

The PRESIDING OFFICER. Without objection, it is so ordered.

## QUORUM CALL

Mr. ROBERT C. BYRD. Mr. President, I suggest the absence of a quorum.

The PRESIDING OFFICER. The clerk will call the roll.

The second assistant legislative clerk proceeded to call the roll.

Mr. PELL. Mr. President, I ask unanimous consent that the order for the quorum call be rescinded.

The PRESIDING OFFICER. Without objection, it is so ordered.

## ATOMIC ENERGY ACT—UNANIMOUS-CONSENT AGREEMENT

Mr. ROBERT C. BYRD. Mr. President, I ask unanimous consent—having cleared this request with the distinguished majority leader and with the leadership on both sides of the aisle and with various Senators on both sides of the aisle, including the distinguished Senator from Rhode Island (Mr. PASTORE)—that at such time as S. 3543, a bill to amend the Atomic Energy Act of 1954, as amended, is called up and made the pending business before the Senate, there be a limitation of time on the bill, of not to exceed 2 hours, the time to be equally divided between and controlled by the distinguished Senator from Rhode Island (Mr. PASTORE) and the distinguished Senator from Vermont (Mr. AIKEN); that time on an amendment by the Senator from Pennsylvania (Mr. SCHWEIKER) be limited to 1 hour, to be equally divided between Mr. SCHWEIKER, the mover of the amendment, and the Senator from Rhode Island (Mr. PASTORE); that time on any other amendment be limited to 30 minutes, to be equally divided between the mover of such amendment and Mr. PASTORE; that Senators in control of time on the bill may yield time therefrom to any Senator on any amendment, debatable motion, or appeal; that time on any debatable motion or appeal be limited to 20 minutes, to be equally divided between the mover of such and the Senator from Rhode Island (Mr. PASTORE); provided finally, that if the Senator from Rhode Island (Mr. PASTORE) favors any such amendment, debatable motion or appeal, the time in opposition thereto be then under the control of the distinguished Republican leader or his designee.

The PRESIDING OFFICER (Mr. PELL). Without objection, it is so ordered.

Mr. ROBERT C. BYRD. Mr. President, to make the record perfectly clear, there is no intent at this time to seek to bring the bill, to amend the Atomic Energy Act of 1954, before the Senate on Monday next. It had been previously hoped that the Senate could take up the bill on Monday early, and that the Senate could return to the unfinished business at a relatively early hour thereafter on Monday. But that will not be done. The Senate will continue to debate the unfinished business on Monday. There could be rollcall votes on motions to table, or on conference reports, if such were to be called up, they being privileged matters. I do not foresee any such at the moment.

Once again, the Senate will proceed to vote on the pending Byrd amendment No. 1187 as modified, on Tuesday next at 2 p.m. That will be a rollcall vote.

## QUORUM CALL

Mr. ROBERT C. BYRD. Mr. President, I suggest the absence of a quorum.

The PRESIDING OFFICER. The clerk will call the roll.

The legislative clerk proceeded to call the roll.

Mr. ROBERT C. BYRD. Mr. President, I ask unanimous consent that the order for the quorum call be rescinded.

The PRESIDING OFFICER. Without objection, it is so ordered.

## PROGRAM

Mr. ROBERT C. BYRD. Mr. President, there will be no session tomorrow. The Senate will again convene on Monday next at 12 o'clock noon. After the two leaders have been recognized under the standing order, Senator PEARSON will be recognized for not to exceed 15 minutes, after which there will be a period for routine morning business for not to exceed 30 minutes with a 3-minute limitation on speeches, at the conclusion of which the Chair will lay before the Senate the unfinished business, S. 3526. The pending question will be on the adoption of the Byrd amendment No. 1187, as modified. Debate thereon will continue throughout the day on Monday. I do not forsee any rollcall votes on Monday, unless conference reports or other privileged matters should be called up. At this moment I foresee none such.

A unanimous-consent agreement has been entered providing for a vote on Tuesday, at 2 o'clock p.m., on the Byrd amendment No. 1187, as modified, That will be a rollcall vote.

## ADJOURNMENT TO MONDAY, MAY 15, 1972, AT 12 NOON

Mr. ROBERT C. BYRD. Mr. President, if there be no further business to come before the Senate, I move, in accordance with the previous order, that the Senate stand in adjournment until 12 noon on Monday next.

The motion was agreed to; and at 5:03 p.m. the Senate adjourned until Monday, May 15, 1972, at 12 noon.

## NOMINATION

Executive nomination received by the Senate, May 11, 1972:

FEDERAL MARITIME COMMISSION

Ashton C. Barrett, of Mississippi, to be a Federal Maritime Commissioner for the term expiring June 30, 1977. Reappointment.