

So Mr. JAVITS' amendments were agreed to.

Mr. JAVITS. Mr. President, I move that the vote by which the amendments were agreed to be reconsidered.

Mr. SPONG. Mr. President, I move to lay that motion on the table.

The motion to lay on the table was agreed to.

#### ORDER OF BUSINESS

Mr. ROBERT C. BYRD. Mr. President, there will be no additional votes this afternoon.

#### ORDER FOR ADJOURNMENT TO 11 A.M. TOMORROW

Mr. ROBERT C. BYRD. Mr. President, I ask unanimous consent, that, when the Senate completes its business today, it stand in adjournment until 11 a.m. tomorrow.

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

#### ORDERS FOR RECOGNITION OF SENATOR BEALL, TRANSACTION OF ROUTINE MORNING BUSINESS AND LAYING BEFORE THE SENATE OF THE UNFINISHED BUSINESS TOMORROW

Mr. ROBERT C. BYRD. Mr. President, I ask unanimous consent that on tomorrow, after the two leaders have been recognized under the standing order, the distinguished Senator from

Maryland (Mr. BEALL) be recognized for not to exceed 15 minutes; and that thereafter 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.

#### ORDER FOR RECOGNITION OF SENATOR BROCK ON WEDNESDAY, APRIL 12, 1972

Mr. ROBERT C. BYRD. Mr. President, I ask unanimous consent that, on Wednesday next, April 12, 1972, immediately after the two leaders have been recognized under the standing order, the distinguished Senator from Tennessee (Mr. Brock) be recognized for not to exceed 15 minutes.

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

#### QUORUM CALL

Mr. ROBERT C. BYRD. Mr. President, I suggest the absence of a quorum, before moving to adjourn for the day.

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 President, I ask unanimous consent that the order for the quorum call be rescinded.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.

#### PROGRAM

Mr. ROBERT C. BYRD. Mr. President, the Senate will reconvene at 11 o'clock tomorrow morning. After the two leaders have been recognized under the standing order, the distinguished junior Senator from Maryland (Mr. BEALL) will be recognized for not to exceed 15 minutes, after which there will be a period for the transaction of routine morning business for not to exceed 30 minutes, with statements limited to 3 minutes, at the conclusion of which the Chair will lay before the Senate the unfinished business, S. 2956, a bill to make rules governing the use of the Armed Forces of the United States in the absence of a declaration of war by the Congress.

Debate will be resumed.

The leadership hopes and expects that amendments will be called up and voted on tomorrow. Consequently, there is a good possibility that rollcall votes will occur on tomorrow.

#### ADJOURNMENT TO 11 A.M.

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 11 o'clock tomorrow morning.

The motion was agreed to; and at 6:10 p.m., the Senate adjourned until tomorrow, Thursday, April 6, 1972, at 11 a.m.

## EXTENSIONS OF REMARKS

#### FEDERAL EFFORTS TO DEVELOP AND DEMONSTRATE NEW AND ENVIRONMENTALLY ACCEPTABLE MEANS FOR ELECTRIC POWER GENERATION, USING COAL, SEEM TO BE INADEQUATE

#### HON. JENNINGS RANDOLPH

OF WEST VIRGINIA

IN THE SENATE OF THE UNITED STATES  
Wednesday, April 5, 1972

Mr. RANDOLPH. Mr. President, I shall discuss the problems associated with the environmentally acceptable generation of electricity from such fossil fuels as coal and oil.

As my colleagues realize, supplies of fossil fuels must grow if our Nation's projected energy requirements are to be met in the future.

My responsibilities as a Senator from a major coal-producing State compel me to devote extensive and priority consideration to the problems surrounding this industry, which employs more than 40,000 people in West Virginia. It is an industry on the viability of which rests in large degree the future of our energy-dependent economy.

Yet, our coal future, our economic future and our Nation's future are critically endangered by the ad hoc nature of national energy policy and the lack of a comprehensive national fuels and energy

policy for the environmentally acceptable development and utilization of energy resources.

#### THE ENERGY CRISIS

Mr. President, I do not overstate the critical nature of this Nation's energy future when I say that we face today and will face tomorrow, and many more tomorrows, a possible acute shortage of environmentally desirable fuels to satisfy the needs of America's industries, business establishments, and homes.

On July 16, 1970, I introduced legislation to establish a National Commission on Fuels and Energy. Had this Commission not been opposed by the administration, but instead established, the pending energy crisis of which I speak might well have been mitigated. The study it would have carried out, however, is being conducted in-house by the Senate Committee on Interior and Insular Affairs under Senate Resolution 45 which I introduced with the Interior Committee chairman, Mr. JACKSON of Washington, as principal cosponsor. My words of almost 2 years ago are valid today:

The crisis of which I shall speak today is a real and genuine one. It is not synthetic. It is not one that has been created. It has developed with the growth of our complex society. It is a crisis that faces approximately 205 million men, women, and children in the United States.

For several decades there have been massive Federal expenditures on nuclear energy research to develop long-term electrical energy supplies. The short term—the 1970's and 1980's—was neglected with respect to energy from non-nuclear sources. The breeder reactor holds promise as a key to providing our energy supplies in the 21st century, but, it is at least 15 years from commercial operation and 20 years from any wide-scale application as an electrical energy supply source. Electricity amounts to less than 10 percent of our national energy demands and these requirements are and will remain until the next century overwhelmingly dependent on fossil fuels, including coal.

During the interim period, until the year 2000, however, this Nation's indigenous, nonrenewable oil reserves may be sufficiently depleted so that their use for nonenergy petrochemical purposes such as synthetic fabrics may be restricted. In addition, nonrenewable natural gas reserves, if not depleted before the year 2000, most likely will be restricted to priority uses. The critical period is from 1976 to 1990 when alternative and reliable supplies of fossil fuels, which satisfy environmental control requirements, must be developed.

There are several joint Government-industry efforts underway to develop commercial processes for the conversion

of coal into liquid and gaseous fuels. When they are subjected to vigorous analysis, however, it appears that these efforts are inadequate from two standpoints:

First, the technologies most likely will not be available when the gap between supply and demand occurs in the middle or late 1970's; and

Second, the amounts of synthetic fuels commercially available most likely will not be sufficient to satisfy an ever-widening gap between environmentally acceptable energy supplies and demands.

If coal liquefaction and gasification and other advanced technologic options are to contribute significantly to easing the energy crisis, increased Federal funding is needed immediately. Until recently the potential and the need for the development of these technologies has been largely ignored.

These technologic alternatives, which rely on our abundant reserves of coal and oil shale, must be pursued more vigorously. The only alternative is an ever-increasing reliance on imports of residual and crude oil. Besides the obvious short-term implications for national security and balance of payments, there also is the catastrophic possibility between now and the year 2000 that international supplies of oil and gas cannot meet international demands.

The most likely reasons for this situation are inadequate transportation capacity and environmental factors, as well as political factors.

Our Nation and, indeed, the world are embarked on a gigantic gamble in attempting to maintain reliable and abundant sources of crude oil, natural gas, and coal and, hopefully, some substitute source of immense amounts of energy—the breeder reactor, fuel cells, or solar power—to replace nonrenewable fossil fuels when they are depleted. Should available energy supplies falter or be depleted, the American people and, perhaps, large portions of the earth may experience catastrophe.

Superimposed on this picture of our energy future is a real concern for the potential side effects of satisfying the energy requirements which must accompany the projected growth in our economy. An "environmental ethic" has developed as a response to the realization that we are faced with an environmental and potential human health crisis of our own making. The problem is of sufficient concern that it is the subject of a June 1972 United Nations Conference on Man and the Human Environment in Stockholm, Sweden.

#### ENVIRONMENTAL IMPLICATIONS

Growing energy consumption potentially includes increased discharges of waste heat into the environment; increased emissions of particulates, sulfur oxides, and nitrogen oxides from fossil fuel usage; and increased radioactive wastes from nuclear powerplants with their associated disposal problems.

Every present electric powerplant still may be in use 20 to 30 years from now with its associated environmental impact. If we are to be successful in resolving the dilemma between energy growth

and preservation of environmental quality, the means must be developed for assuring the availability of clean fossil fuels.

The foresight of former Federal Power Commissioner Carl E. Bagge, in a speech before the American Power Conference in 1970, deserves repeating:

The problem posed by the necessity to rely on fossil fuel generation as the backbone of the industry for many years to come is compounded by the fact that low sulfur fossil fuels are simply not presently available in sufficient quantities to clear the air pollution hurdle which now has been imposed upon the industry. Natural gas, the cleanest fossil fuel, accounts for one-quarter of all electric generation by steam plants and for one-sixth of the gas consumed in this country. It appears unlikely, however, that domestic gas supplies will be able to substantially alleviate the problem. While imported LNG (liquefied natural gas) and residual fuel oil hold out some promise, neither do their prospects appear sufficient to resolve the problem.

Although spoken in 1970, Mr. Bagge's words constitute an important warning today.

The time has come for our society to act to assure ample environmentally acceptable energy supplies while averting future energy crises. A comprehensive national energy policy is needed which would enable us to restore that balance between man's activities and nature. Perhaps the most critical factor in reestablishing this equilibrium is man's determination to create an environment based not on economic considerations alone but based, too, on his total physical, psychological, and spiritual needs.

#### CONGRESSIONAL MANDATE

When the Air Quality Act was enacted in 1967, the Congress considered the potential health and environmental implications of projected energy demands. In 1970, this was affirmed by the Congress when a national policy was enunciated that the protection of the health of the citizens of the United States must be assured, regardless of economic cost.

The 1967 act also included an amendment which this Senator authored and offered calling for the development and demonstration of new and improved methods for the prevention and control of air pollution resulting from the combustion of fuels. This authority was reinforced by the Congress in the Clean Air Amendments of 1970 which specifically authorized the Environmental Protection Agency to undertake research and development in the area of "improving the efficiency of fuels combustion so as to decrease atmospheric emissions; and producing synthetic or new fuels which, when used, result in decreasing atmospheric emissions."

The 1970 amendments also provided authority for EPA to establish performance standards for new stationary sources which reflect the best available technology and methods for controlling atmospheric emissions of such pollutants as sulfur oxides. Under this authority Administrator Ruckelshaus in 1971 promulgated new source performance standards for steam electric powerplants

which cover emissions of particulates, sulfur oxides, and nitrogen oxides. Emissions from existing steam electric powerplants also are being controlled by federally approved State plants which must provide, at a minimum, the protection of public health.

From information supplied by the Environmental Protection Agency, the following observations can be made concerning these actions:

Forty percent of the U.S. population is living under conditions where sulfur oxide levels are unacceptable from the standpoint of health;

Achievement of the primary or health standard in these areas will require control of both existing and new sources to a level equivalent to one-tenth percent sulfur coal or 2.4 pounds of sulfur per ton of coal; and

New Source Performance Standards for steam electric generating sources located in other areas and using fossil fuels will require the use of seven-tenths percent sulfur coal or 14.4 pounds of sulfur per ton of coal.

The public has expressed a desire to deal directly with the environmental costs of energy production. Therefore, utilities are being asked to take the necessary control measures to protect and enhance the quality of the human environment. The resultant expenditures are estimated to involve large sums of money for air pollution control, for cooling towers to dissipate waste heat, and for newer powerplants and transmission lines which are compatible with surrounding landscapes. These expenditures undoubtedly will be reflected in electric utility rate structures. The critical factor, however, is the availability of environmentally acceptable fuels, coal and oil in particular.

#### AVAILABLE EASTERN COAL SUPPLIES

As mentioned, air pollution control regulations already enacted, and others pending, will eliminate the use of coal containing more than seven-tenths percent sulfur unless adequate means can be provided at the point of use for providing environmentally acceptable emissions. The immediate effect of implementation of these standards on the use of eastern coal for electric power generation was estimated by the Environmental Protection Agency to have the following implications:

Only about 18 percent—70 million tons—of the steam coal supplied in 1975 from the Appalachian and interior regions to large eastern steam generating capacity can be expected to meet environmental standards;

In 1975, there essentially will be no new supplies of interior region steam coal available which will meet the new source performance standard for sulfur oxides;

In 1975, there will not be any practical potential for increasing the rate of production of steam coal in the "as mined condition" from the Appalachian region to meet the new source performance standard.

Coal cleaning is possible by mechanical or chemical means; however, it is anticipated that it will be 1985 before this technology could potentially permit all



Appalachian and interior steam coal to meet the new source performance standard.

These sources of supplies, however, constitute more than 90 percent of the current total coal-fired electric utility capacity of the United States and 70 percent of the projected total 1975 U.S. steam coal consumption.

#### ALTERNATIVE FOSSIL FUEL SUPPLIES

Several fossil fuel sources are available as alternatives to eastern coal. These include western region coal, residual oil, and natural gas. There are also emission control technologies such as fuel cleaning and flue or stack gas cleaning. I ask unanimous consent to have printed at this point in the RECORD EPA's analysis of these alternatives.

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

#### EFFECT OF STANDARDS FOR STATIONARY COAL FIRED POWER GENERATING SOURCES ON THE USE OF EASTERN COAL

The New Source Performance Standard for solid fuel (coal) will limit the use of Appalachian and Eastern Interior steam coals unless additional SO<sub>x</sub> emission control technology is applied. Realizing this potential effect, the Office of Research and Monitoring has supported study efforts designed to quantify the supply/demand relationship for steam coal in the eastern United States after application of the New Source Performance Standard in 1975. The results of these efforts are summarized in the following paragraphs.

The estimated 1975 coal demand of eastern steam generating capacity to which the New Source Performance Standard directly or indirectly applies; i.e. units greater than 250 x 10<sup>6</sup> BTU/hr. (about 25 MWe) is 400 million tons. This includes both new and modified capacity coming on stream in 1975 and existing capacity to be controlled by the states to levels equivalent to the New Source Performance Standard. This constitutes more than 90% of the total coal-fired electric utility capacity of the United States and 70% of the projected total 1975 United States steam coal consumption. As shown in Table II, only about 18% (70 million tons) of the steam coal supplied from the Appalachian and Eastern Interior region in 1975 to large Eastern steam generating capacity can be expected to meet the standards of 0.6 Lbs. S/MBTU at the current industry production growth rate of 7% per year.

TABLE I

Region and pounds S/10 <sup>6</sup> B.T.U.	Cumulative mineable reserves* (10 <sup>6</sup> tons)	Cumulative 1975 production (10 <sup>6</sup> tons)
Appalachian:		
0.6.....	1,500 (3,000)	70
0.8.....	3,000 (8,000)	135
1.2.....	4,000 (13,000)	160
All coal.....	9,500 (25,000)	275
Interior:		
0.6.....	25	0.7
0.8.....	125	1.5
1.2.....	1,800	22.0
All coal.....	68,000	230.0

\*The 1st column under cumulative mineable reserve in the Appalachian Region is based on the results of "1967 Appalachian Coal Data Survey Report", U.S. Bureau of Mines, published in 1971. The column represents the reserves held by operating mining companies with production greater than 100,000 tons per year. The 2d column in parenthesis is derived from Averitt's estimate of total mineable coal reserves in the ground to which the sulfur estimates contained in Bureau of Mines Information Circular I.C. 8312, (1966) have been applied.

Two facts are of particular importance in Table I: (1) Essentially no steam coal meet-

ing the New Source Performance Standard exists in the Interior Region and (2) no practical potential for increasing the rate of production of steam coal meeting the New Source Performance Standard in the "as mined condition" exists in the Appalachian Region. For example, based on a 20-year lifetime for the total mineable reserves shown in Table I, the production growth rate on low sulfur steam coal in Appalachia could not exceed the current 7% per year.

Based on the previously summarized results, the Office of Research and Monitoring has evaluated the potential of (1) alternative fossil fuel sources and (2) SO<sub>x</sub> emission control technology currently available or under development by EPA to meet the coal supply deficit at the New Source Performance Standard for SO<sub>x</sub>. These alternatives include the following:

#### FOSSIL FUEL ALTERNATIVES

Western Region Coal  
Residual Oil  
Natural Gas

#### EMISSION CONTROL TECHNOLOGY ALTERNATIVES

Flue Gas Desulfurization  
Clean Fuel

##### 1. Western Region Coal

Although vast reserves of low sulfur coal are known to exist in the Western Region, the bulk of these reserves are of the low heat content lignite rank and have a sulfur content in terms of Lbs. S/MBTU exceeding the New Source Performance Standard. Reserves of strippable bituminous and sub-bituminous coal estimated to meet the New Source Performance Standard are only 5.5 billion tons.

TABLE II.—SUPPLY/DEMAND RELATIONSHIP FOR ACHIEVING THE NEW SOURCE PERFORMANCE STANDARD IN EASTERN UNITED STATES COAL-FIRED COMBUSTION

	(10 <sup>6</sup> tons)		
	1975	1980	1985
Demand: Total estimated eastern United States demand for coal meeting new source performance standard.....	400	500	650
Supply factors:			
Natural low sulfur			
Appalachian and interior region coal.....	70	110	150
Western region coal.....	40	70	120
Flue gas desulfurization.....	30	200	240
Cleaned fuels.....	20	90	140
Total supply potential.....	160	470	650
Supply/demand, percent.....	40	72	100

The estimated 1975 production from these sources is about 60 million tons of which 40 million tons will be absorbed directly in the Western Region. The remaining 20 million tons will be shipped for use in the Interior Region. This production represents a growth rate of 20% per year between 1970 and 1975. Based on the probable maximum availability of strip mining equipment and railroad transportation, Western Region production might be raised to 80 million tons by 1975. Thus, 40 million tons, or an additional 10% of the Eastern utility steam coal demand could be met by this source in 1975. Based on a 20-year lifetime for the mineable reserves, a maximum annual production growth rate of about 15% could be maintained for these Western coal sources.

Transportation costs on the order of \$8 per ton per 1000 miles and major differences in moisture content and other characteristics also limit its use in Eastern steam generating capacity. The major foreseeable Eastern application for new Western coal production will be in new capacity designed specifically for this fuel. It is expected that

transportation costs will limit this application to locations no farther east than Indiana.

##### 2. Residual Oil

By 1975, it is estimated that only about 40% of the total residual oil supply required by the Eastern United States will meet the New Source Performance Standard. This demand projection does not include any additional conversion of coal fuel steam generating capacity to oil beyond that already defined. Despite improved capabilities and capacity to desulfurize residual oil, no decrease in the supply shortage is foreseen before 1985. As a result of this forecast, residual oil does not appear to have a measurable impact on reducing the coal supply/demand deficit in the Eastern United States at sulfur levels defined by the New Source Performance Standard.

##### 3. Natural Gas

Physical shortages of natural gas including pipeline importation and liquefied natural gas are expected to be on the order of 30% by 1975 and as much as 40% by 1980. This shortage is again based on currently defined gas demand projections without consideration of additional increase for conversion of coal-fired steam generating capacity. Thus, no impact on reducing the coal supply/demand deficit in the Eastern United States is considered practical.

##### 4. Flue Gas Desulfurization

The development of flue gas desulfurization technology by EPA can have a significant impact on increasing the availability of Appalachian and Interior Region steam coal capable of achieving the New Source Performance Standard. It is expected that three flue gas desulfurization systems will be commercially available for application by 1975. These are (1) Lime/limestone Wet Scrubbing, (2) CAT-OX and (3) MAG-OX. These systems can be applied by all new coal-fired utility steam generating capacity coming on stream after 1975. In addition to new utility capacity, these systems, as well as others in development by EPA, may be eventually retrofitted to an estimated 40% of existing utility steam generating capacity. Because of the level of construction and manufacturing effort required, it does not appear practical to expect this retrofit effort to be completed until at least 1980. Based on an ability to remove 80% of the sulfur oxides in the flue gas, flue gas desulfurization will increase the supply of Interior and Appalachian coal meeting the New Source Performance Standard by an estimated 32 million tons in 1976 or 8% of the coal demand by large Eastern steam generating capacity. By 1980, assuming the maximum retrofit capability, this percentage could increase to 50% of the coal demand of large Eastern steam generating capacity. In addition, the application of this technology to Interior region coal will eventually permit all coal in the region to meet the New Source Performance Standard. The cost of this technology is expected to be about \$2 to \$5 per ton of cleaned coal.

##### 5. Clean Fuels

The Office of Research and Monitoring is currently developing several processes for reducing the sulfur content of coal prior to combustion.

##### 5.1 Mechanical Coal Cleaning

This process, long used by the metallurgical coal industry involves the crushing of coal to release about one-half of pyritic bound sulfur component. This crushing is followed by washing to remove the pyrite by specific gravity difference. The optimization of this process for steam coal by EPA is well advanced and could be commercially applied prior to 1975. The maximum commercial application of physical coal cleaning technology under development by the EPA

could increase the availability of Appalachian steam coal meeting the New Source Performance Standard in 1975 from 70 million tons to about 90 million tons. The increase is equivalent to 5 percent of the coal demand of large Eastern Steam generating capacity. In addition the application of this technology to Interior region coal will permit essentially all coal in the region to meet the New Source Performance Standard when used in conjunction with Flue Gas Desulfurization systems. The low cost of mechanical coal cleaning technology (about \$1 per ton of cleaned coal) also makes it economically practical for the user to consider these additional flue gas control options.

#### 5.2 Chemical Coal Cleaning

The commercial application of technology for the removal of sulfur from coal by solvent extraction refining is expected to be achieved by 1975. By 1978 this technology could increase the availability of Appalachian and Interior steam coal directly meeting the New Source Performance Standard by 90 million tons or 23 percent of the demand of large Eastern Steam generating capacity. The cost of this cleaning process, based on preliminary development results, is estimated as about \$2.00 per ton of cleaned coal.

Technology for the removal of organic sulfur is also being developed by EPA. If successful the commercial application of this technology could begin in about 1978 in conjunction with the previously described inorganic bound sulfur removal process. By 1985 it could potentially permit all Appalachian and Interior steam coal to meet the New Source Performance Standard. The additional cost of this organic sulfur cleaning process is estimated at about \$3.00 per ton of cleaned coal.

It is important to point out that although these chemical cleaning processes can have an important impact on utility scale steam generating capacity, their primary impact may be in controlling emissions from smaller industrial and area combustion sources to which other flue gas control alternatives such as flue gas desulfurization or combustion modification do not apply. The control of these smaller sources can be of particular importance in achieving ambient air quality standards.

SOURCE.—Letter of March 9, 1972 to Senator Jennings Randolph from Stanley M. Greenfield, Assistant Administrator for Research and Monitoring, Environmental Protection Agency, Washington, D.C.

Mr. RANDOLPH. Mr. President, the following observations are painfully apparent from EPA's material:

In 1975 only 10 percent, or 40 million tons, of the total demands for eastern utility steam coal can be supplemented or met by western coal sources;

By 1975, only about 40 percent of the total available residual oil supply required by the Eastern United States will meet the New Source Performance Standards which are less stringent than those for the critical urban areas;

it does not appear that new residual oil supplies will have a measurable impact on reducing the coal supply/demand deficit in the Eastern United States for the sulfur levels represented by the New Source Performance Standard;

Physical shortages of natural gas are expected to be on the order of 30 percent by 1975 and as much as 40 percent by 1980. Thus, there is no practical potential for reducing the impact of the coal supply/demand deficit in the Eastern United States through use of natural gas; in addition, there is an anticipated gas supply/demand deficit to be satisfied; and

Flue gas treatment systems offer potential for application by all new coal-fired electric generating capacity coming on stream after 1975; however, it only appears practical to expect that a maximum of 40 percent of existing facilities can be retrofitted and this cannot be expected to be completed until at least 1980. The maximum retrofit capability could increase, however, to 50 percent of the coal demand of large eastern steam generating capacity by 1980. The cost is expected to be about \$2 to \$5 per ton of coal.

The critical question is whether the industry can survive the period of adjustment represented by these controls. These observations were affirmed by President Garvey of Bituminous Coal Research in a letter to me—February 11, 1972—which I ask unanimous consent to have printed at this point in the RECORD.

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

BITUMINOUS COAL RESEARCH, INC.,  
Pittsburgh, Pa., February 11, 1972.

HON. JENNINGS RANDOLPH,  
U.S. Senate,  
Washington, D.C.

DEAR SENATOR RANDOLPH: At the February 8, 1972 hearing before the Committee on Interior and Insular Affairs, on S. Res. 45, you requested that I submit for the record additional information on coal reserves, as such information relates to a part of my statement in which I said, "The use of low-Btu gas will allow the efficient and non-polluting use of the still-remaining coal resources in Appalachia and the Midwest." You specifically asked that the information submitted refer to West Virginia, the Appalachia region, and the Midwest.

Air pollution control regulations already enacted and others pending enactment will eliminate the use of coals containing more than 0.7 percent sulfur unless some means is provided at the point of use for prevention of sulfur oxide emissions from the stack. How do existing reserves of coal in the eastern half of the United States from which most of our production now comes fit this requirement?

The only available reference which presents data on coal reserves according to sulfur content was published by the U.S. Bureau of Mines in 1966 (Sulfur Content of United States Coals, U.S.B.M. Information Circular 8312). While this publication gives data on coal reserves as of January 1, 1965, and some of the reserves have since been depleted, it is believed that the analyses contained therein are still appropriate for the purposes of your request. As of 1965:

#### WEST VIRGINIA

The total reserves were 102.7 billion tons, of which 81.9 billion tons, or 80 percent, had sulfur content in excess of 0.7 percent.

#### APPALACHIA

The Appalachia region includes the states of Alabama, Tennessee, Virginia, West Virginia, Ohio, and Pennsylvania. This is the largest depository of high-rank bituminous coal with approximately 31 percent of the total remaining reserve of the nation. About 204 billion tons, or 90 percent of this total reserve could not meet the 0.7 percent sulfur limitation.

#### MIDWEST

The states of Illinois, Indiana, Iowa, and Kansas have bituminous coal reserves totaling about 198 billion tons, of which 99.9 percent is more than 0.7 percent sulfur content.

#### KENTUCKY

Although neither totally in Appalachia nor the Midwest, the reserves in Kentucky should

also be mentioned. Of the approximate 66 billion tons, 79 percent of that state's coal exceeds the 0.7 percent sulfur limit.

Obviously, to enable the use of the tremendous coal reserves contained in the eastern half of the United States, of which only about 14 percent is less than 0.7 percent sulfur content, while at the same time meeting the sulfur emission requirements stipulated by the Environmental Protection Agency, processes must be developed which will prevent emission of sulfur oxides from the stack following combustion. While some progress has been made in the development of stack gas clean-up methods, and this may be an interim solution for existing plants, I feel a long-range program should be pursued with the objective of eliminating sulfur oxide emissions in a more efficient manner. I believe the application of low-Btu gas using the basic technology being developed through the high-Btu gas research program offers the most attractive solution.

Sincerely yours,  
JAMES R. GARVEY,  
President and Director of Research.

Mr. RANDOLPH. Mr. President, the opinion expressed by EPA that:

It appears that the only satisfactory method for maintaining Eastern seam coal in the energy market is through conversion to synthetic gaseous or liquid fuels.

Elimination of environment regulation displaced coal production would represent a loss of \$1 billion annually in sales, a loss of a critical energy resource; and a reduction of about 30 percent in the current work force employed in the bituminous coal industry. Some 44,500 mine workers would be affected adversely, including 15,000 in West Virginia.

#### SURFACE MINING CONTROLS

Added to the factors I have mentioned is concern for the environmental impacts of surface mining. In many areas of the country, surface mining has become a highly emotional issue. Unfortunately, a polarization of viewpoints is developing with one side advocating total abolition of surface mining and the other, in effect, insisting that surface mining has produced substantially good results.

I understand and sympathize with the feelings of both groups. People who have seen the country ravaged by reckless mining have every right to be disturbed. At the same time, the responsible surface mine operator should not be victimized by the shortcomings of his less responsible associates.

In recent years, more than half of the coal mined in the United States has been produced by surface mining methods. Accompanying this increase in surface mining activity has been a heightened public awareness of the potentially adverse environmental impacts resulting from the extraction of coal by this method. In West Virginia, surface mining is perhaps the most intensely debated public issue. In 1967, the West Virginia State Legislature enacted new controls over surface mining. Since then, additional surface mine law amendments have been enacted and other proposals have been made. And there have been recommendations that all surface mining be banned in West Virginia.

Mr. President, after examining carefully a number of legislative proposals relating to surface mining of coal, on February 24, 1972, I introduced a bill (S. 3282) on this subject. The legislation



would establish a program of strict controls of surface mining operations and require reclamation of the highest quality. It would provide for neither abolition of surface mining nor its conduct without careful attention to its consequences.

In a study commissioned by the Legislature of West Virginia, it was estimated that approximately 8,000 people would lose their jobs if surface mining were prohibited in our State. I do not believe that irresponsible surface mining can be condoned; neither do I believe that total abolition is necessary to protect the environment.

#### FUTURE TECHNOLOGIC OPTIONS

The Air Quality Act of 1967 authorized a major Government-industry program for the development and demonstration of methods for the control of air pollution from the combustion of high sulfur fuels from the regions I have mentioned. While there has been progress under this program, accomplishments have not met congressionally estimated needs. Some processes have fallen far short of expectation while others are approaching commercial status; but the effort, as a whole, has been seriously inadequate, and both Government and industry are to blame.

Section 104 of the 1967 Air Quality Act provided for research and development activities into new and improved methods for the prevention and control of air pollution resulting from the combustion of fuels. These provisions contain two special features:

First, funds remain available until expended providing a flexibility that is useful in the planning and scheduling of research and development and demonstration projects which may extend beyond one fiscal year; and

Second, a legal basis is defined for supporting projects involving construction and installation of pollution control equipment on private property; this authority is very useful since industrial plants are the best possible sites for making a realistic evaluation of the economic and technological feasibility of new processes for the control of problems such as sulfur oxides pollution.

In 1969 a National Academy of Engineering—National Research Council Ad Hoc Panel on the Control of Sulfur Dioxide—concluded that "contrary to widely held belief, commercially proven technology for control of sulfur oxides from combustion processes does not exist," and a 5-year research plan was recommended to assure that the technology was available to meet 1975 air pollution control requirements.

Today, many industry spokesmen quote this almost 3-year-old report extensively as the current recognized judgment of experts and as their basis for not installing sulfur oxide control methods. Except for the foresight and leadership of a few companies, the progress that has been made would not have been accomplished. There also has been an obvious reluctance by industry to participate in this 5-year-old Federal program which has been consistently underfunded and understaffed by the Congress and by the executive branch alike.

As anticipated in 1970, one of the

recommendations of the first annual report of the Council on Environmental Quality was:

Federal research and development on sulfur oxides and nitrogen oxide control technology should be accelerated. Sulfur oxides control technology for large coal-and-oil-fired power plants should be demonstrated in actual operation so that the technology can be applied throughout the industry.

The Council's first annual report also recommended:

A more balanced research and development program is necessary to hasten the development of more efficient energy processes. Although control technology for sulfur oxides will provide appreciable improvements for several decades, a longrun answer to this type of air pollution lies in better energy conversion processes which will emit less pollutants per unit of energy produced. Gasified coal, fluidized bed combustion, breeder reactors, and nuclear fusion all hold promise. Although research for new nuclear power sources has already received significant support, greater attention must be given to these other processes. Even now, the Nation needs to use its fuel resources more effectively through development of a national energy policy. Such a policy would guide the use of natural gas, low-sulfur coal and oil, and other energy resources to assure their availability and minimize air pollution.

#### ADEQUACY OF EPA FUNDING AND EXPENDITURES

The Congress responded to this need in 1967 and authorized in the Air Quality Act \$370 million for the 5-year period, 1968 through 1972, for the total research and development program under section 104. Appropriated funds fell short of these estimates and authorizations, the actual appropriations for the 5-year period having been \$133.5 million. Although the full amounts appropriated reportedly have been obligated, expenditures have been only \$85.6 million, leaving \$38.9 million of appropriated funds unspent. Of these amounts, expenditures for stationary source pollution control research and demonstration were some \$50.5 million.

I propose to place these levels of funding in perspective. In 1967, the then National Air Pollution Control Administration projected Federal expenditures for a 5-year research and development plan for the control of sulfur oxide emissions from stationary sources alone should be \$394 million.

A separate study by the Stanford Research Institute at the agency's request estimated sulfur oxide control technology development alone would require a Federal commitment of \$255 million in the same 5-year period between 1968 and 1972 in order to have available an adequate sulfur oxide control capability by 1975. Yet, expenditures for the whole technology development program have been \$85.6 million—for sulfur oxide, nitrogen oxides, particulates, special industry problems, and incineration control problems.

Congress increased the administration's budget request and appropriated \$45 million for fiscal year 1970 for EPA's effort under section 104 of the Clean Air Act. However, only \$36 million was obligated to this effort by the executive and expenditures were only \$14 million. Obviously, Federal program efforts and

funding have been unresponsive to anticipated requirements and this lack of foresight has contributed significantly to the potential coal supply problems I have mentioned. Mr. President, I ask unanimous consent to have printed at this point in the RECORD correspondence from EPA Administrator Ruckelshaus and Deputy Administrator Greenfield indicating expenditures and obligations for this program.

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

ENVIRONMENTAL PROTECTION AGENCY,  
Washington, D.C., December 1, 1971.  
Hon. JENNINGS RANDOLPH,  
U.S. Senate,  
Washington, D.C.

DEAR SENATOR RANDOLPH: Enclosed, with exceptions, is the information you requested in your letter dated November 11, 1971, on the research, development, and demonstration program conducted pursuant to Section 104 of the Clean Air Act, as amended.

Since the President's program and related funding level are still in the formulating stage, and will not be available until January 1973 when the President submits his Budget to Congress, data for FY 1973 is not reflected. Similarly, and for the same reason, funding data for subsequent years is also not provided.

I hope this information that is provided will be helpful. If we can be of further assistance to you, please let us know.

Sincerely yours,  
WILLIAM D. RUCKELSHAUS,  
Administrator.

#### SEC. 104—FUNDING HISTORY, FISCAL YEARS 1967-72

(Dollars in thousands)

	1969	1970	1971 <sup>1</sup>	1972 <sup>1</sup>
I. Appropriations and expenditures:				
Appropriations....	\$18,700	\$45,000	\$29,100	\$40,700
Expenditures.....	3,587	14,289	27,684	39,000
II. Expenditures by major program:				
a. Stationary source pollution control.....	2,844	8,028	14,199	22,514
b. Mobile source pollution control.....	443	2,315	6,684	15,181
c. Other related programs....	300	3,946	6,801	1,305
Total.....	3,587	14,289	27,684	39,000

<sup>1</sup> Estimates.

Note: Fiscal year 1969 1st years funds appropriated for this purpose, therefore fiscal year 1967 and fiscal year 1968 not shown.

#### CHANGES IN EMPHASIS IN SO<sub>2</sub> CONTROL TECHNOLOGY R.D. & D. PROGRAM, 1971 THROUGH 1972

##### SHORT TERM SO<sub>2</sub> PROGRAM

The major change in emphasis will concentrate funding in flue gas treatment so that it is focused on the completion of major demonstrations which can impact on the attainment of primary SO<sub>2</sub> standards by 1977 and earlier, where possible. Two new demonstrations will be added during fiscal 1972, making a total of six major demonstrations. Beginning in fiscal 1972, second generation flue gas treatment processes will be deemphasized. These processes generally tended to represent processes which could not be carried through a demonstration stage in time to impact on attainment of primary standards. The processes being dropped generally represented new ways of accomplishing the same results.

Physical desulfurization of fuel will be

deemphasized starting in fiscal 1973. Coal producers and consumers have generally been dispassionate about the cost sharing of a demonstration for physical cleaning of coal. By the end of fiscal 1972, the washability of over 80 percent of Eastern coal production will have been defined. Projects will have been completed which provide design guidelines on the optimization of physical cleaning processes with respect to sulfur removal. This information can provide considerable guidance to coal producers in the building of any new coal cleaning plants.

The potential for chemical cleaning of coals

will be evaluated and any work undertaken in the period fiscal 1973 through 1975 will emphasize these processes as opposed to physical methods. It is not anticipated that chemical cleaning of coal can be demonstrated in time to impact on the attainment of primary standards.

#### LONG-TERM SO<sub>x</sub> PROGRAM

The emphasis of the long-term SO<sub>x</sub> program will be more sharply focused on a specific end product, namely the demonstration of an advanced power cycle. Such a cycle represents a systems approach in which the derivation of energy from the combustion of

fossil fuels can be considered in terms of the resulting environmental pollution problems. The system takes into consideration the desirability of removal of potential air pollutants in concentrated rather than dilute gas streams resulting from final combustion. It furthermore provides the opportunity for less waste heat, thus increasing overall efficiencies and minimizing thermal pollution. The existing program will be reoriented so that the present contributing components (new combustion techniques and fuel conversion) will be sharply focused on the needs of the state-of-the-art demonstration of the advanced power cycle.

### III—SO<sub>x</sub> CONTROL PROGRAM FISCAL YEARS 1971-72, FUNDING LEVELS AND MAJOR CONTRACTORS

[In thousands of dollars]

	Funded prior to fiscal year 1971	1971	1972	P—Planned A—Active		Funded prior to fiscal year 1971	1971	1972	P—Planned A—Active
<b>I. SHORT TERM SO<sub>x</sub> CONTROL</b>									
<b>A. Flue Gas Treatment</b>									
<b>(i) 1st generation—demonstration:</b>									
Dry limestone		857	509		Conceptual design		225	225	
TVA (demo)	Yes	750	390	A	TVA (evaluation of process)	Yes	225	225	A
Research Cottrell (tests)	Yes	40		A	Metal oxides		80		
Other contracts and in-house	Yes	67	50	A	USBM (evaluation of sorbents)	Yes	80		A
West Virginia University (injection process)	Yes		15	A	Total		435	395	
Illinois Geological Survey (carbonate rock)	Yes		54	A	Total flue gas treatment		5,593	11,128	
Wet limestone		3,528	3,243		<b>B. Fuel Desulfurization</b>				
Bechtel (demo)	Yes	367	800	A	Coal cleaning	Yes	822	609	
TVA (demo)	Yes	2,005	1,630	A	USBM (support)	Yes	649	404	P
Cottrell (Venturi)	No	163	95	A	USAF-NITRE (technical reviews)	Yes	90	105	P
Radian (study of limestone wet scrubbing)	Yes	262	25	A	Bituminous coal research (evaluation of Pyritic Sulfur)	Yes	83	100	P
Combustion engineering (marble bed scrubber)	No	249		A	Chemical fuel desulfurization		69	397	
West Virginia University (Venturi)	No	30		A	TVA (removal of NO <sub>x</sub> and SO <sub>x</sub> )	No	69	398	P
West Virginia University (Flyash)	Yes	57		A	High sulfur combustor study		15		
USAF Aerospace (Flyash)	No	100	117	A	Chemico (Study)	Yes	15		A
Environmental engineering (pilot study)	Yes	20		A	Other contracts			262	
Other contracts and in-house	Yes	183	106	A	Total		906	1,269	
TRW (holographic techniques)	Yes	92		A	<b>C. Other Direct Related Effort</b>				
Monsanto (pilot scrubber)	No		115	A	Total		2,960	6,529	
McCrone (sampling train)	No		20	A	Analysis and measurements		1,558	2,454	
International minerals and chemicals (pore volume)	Yes		10	A	Industrial processes		428	2,175	
Catalytic oxidation		107	350		General support		974	1,900	
Mitre (test program)	Yes	100	350	A	Total short term SO <sub>x</sub>		9,459	18,926	
Illinois Power Co. (scale model)	No	7			<b>II. LONG TERM SO<sub>x</sub> CONTROL</b>				
Magnesium oxide (oil)		39			<b>A. New Combustion Techniques</b>				
Babcock-Wilcox	No	39		A	Total		1,484	2,685	
Magnesium oxide (coal)			500		Westinghouse (evaluation of fluidized bed combustion)	Yes	375	400	A
Chemico/Boston Edison	Yes		500	P	ESSO (fluid bed)	Yes	179		
Soluble alkaline scrubbing			5,958		Argonne National Lab. (atmospheric pollution)	Yes	441	300	A
(2 demonstrations)	No		5,958	P	USBM (fluidized bed combustion)	Yes	265	150	A
Total		4,531	10,560		Pope, Evans, & Robbins (char. of air pollutants)	Yes	224	35	A
<b>(ii) Second generation—pilot plant</b>					ESSO, England (coal gasifier)	Yes		350	A
Sodium citrate	No			P	ESSO (regenerable fluidized bed of limestone)	Yes		200	A
Ammonia scrubbing		240	173		National Coal Board (reducing emissions)	Yes		400	A
TVA (pilot study)	Yes	240	173	A	Other contracts and in-house	Yes		850	A,P
Molten carbonate		40			<b>B. Fuel Conversion</b>				
North American Rockwell (development of process)	Yes	35		A	Total		852	535	
Sigmater-Breyer (evaluation of process)	Yes	5		A	Black, Sivalls, & Bryson (submerged combustion)	Yes	667		
Regenerable char		347			Scientific Research Inst. (sulfur sequestering)	Yes	185	300	A
Westvaco (development of process)	No	347		A	Pittsburgh-Midway (de-ashed/de-sulfurized coal)	No		200	P
Total		627	173		Other Contracts & in-house	Yes		35	A
<b>(iii) Second generation—other:</b>					<b>C. Advanced Power Cycles</b>				
Modified chamber		130	170		Total		282	808	
Tyco (development of process)	No	130	170	A	Consolidated Coal Co. (CO <sub>2</sub> acceptor)		282	400	A
Aqueous formate	No			P	Other contracts and in-house			408	P
					<b>D. Other Direct Related Effort</b>				
					Total		300	484	
					General support		300	484	
					Total long term SO <sub>x</sub>		12,377	23,438	
					NO <sub>x</sub> adjustment		-560	-970	
					Adjusted total		11,817	22,468	

\* Includes \$25,000,000 in addition to the budget currently being planned for 1973.



ENVIRONMENTAL PROTECTION AGENCY,  
Washington, D.C., March 9, 1972.  
Hon. JENNINGS RANDOLPH,  
Chairman, Committee on Public Works,  
U.S. Senate,  
Washington, D.C.

DEAR MR. CHAIRMAN: In response to your February 14 request for additional material in support of my February 8 testimony, I am enclosing the following:

1. Data to update Administrator Ruckelshaus' December 1, 1971 information on the research, development, and demonstration program pursuant to Section 104 of the Clean Air Act, as amended.

2. Status report on EPA fuels combustion research program.

3. Briefing document describing estimated effect of standards for stationary coal-fired steam generating sources on the use of Eastern coals.

4. Information and current status of proposals to demonstrate advanced or combined power cycles.

I trust this information is responsive to your needs. If I can be of further service, please let me know.

Sincerely yours,

STANLEY M. GREENFIELD, Ph. D.,  
Assistant Administrator for Research  
and Monitoring.

#### SEC. 104. CLEAN AIR ACT, STATUS OF EXPENDITURES

##### FUNDING HISTORY

(Dollars in millions)

	Fiscal years—				
	1969	1970	1971	1972	1973
Appropriated.....	\$18.7	\$45.0	\$29.2	\$34.8	\$39.5
Carried over from previous year.....		5.6	14.1	15.9	3.7
Available for obligation.....	18.7	50.6	43.3	50.7	43.2
Obligated.....	13.1	36.5	27.4	47.0	43.2
Carry-over to subsequent year..	5.6	14.1	15.9	3.7	.....

Note: The status of funding for sec. 104, Clean Air Act, is summarized and updated in the table below for fiscal years 1969 through 1973.

Mr. RANDOLPH. Mr. President, without the development of economically and technically feasible methods to control sulfur oxide and other emissions, the Nation's commitment to effective air pollution control cannot be honored. The effect of underfunding this vital activity has delayed important research and development work in control technology, thus delaying the establishment and implementation of emission standards and new source performance standards, and impeding vital efforts to improve the quality of our air resources.

##### AVAILABLE SULFUR OXIDES CONTROLS

Recently, the research emphasis of EPA's sulfur oxide control program was changed to concentrate on completion of major sulfur oxide flue gas treatment demonstrations which can influence the attainment of primary air quality standards for sulfur oxides by 1977 and possibly earlier. This implies a possible 2-year extension for compliance with the primary quality standard from 1975 to 1977. The data for existing sources suggests a slippage to possibly 1980 for compliance. This is hardly pollution control progress.

The EPA's principal and overriding criteria for funding sulfur oxide demonstration proposals is the nearness of the

technology to a commercial system. The Department of Commerce and the Federal Power Commission have interpreted "available technology" to mean a process has been demonstrated on 100 megawatt—electric—facility for at least 1 year. In light of this definition, the current program does not provide sufficient latitude to fund proposals which will not produce a commercial process by 1975 to 1977.

As a result of this policy, second generation or advanced flue gas treatment methods have been deemphasized. These processes generally represent new and often more economic ways of accomplishing the same results. These "second generation" processes, which offer potential improvements in efficiency and cost in the post-1977 period, cannot be pursued under current budgetary restrictions. Therefore, control of sulfur oxides may very well be imposed at a premium cost which ultimately must be borne by the consumer.

Four control systems are being advanced to the stage of demonstration on the scale of about 100 megawatts electrical:

A dry limestone injection process developed by the Air Pollution Control Office and the Tennessee Valley Authority;

A limestone and wet scrubbing process being undertaken by the same group;

A magnesium oxide wet scrubbing process developed by the Chemico Corp., to be demonstrated by the Boston Edison Co.; and

A catalytic oxidation process developed by the Monsanto Company, to be demonstrated by the Illinois Power Co.

Two new demonstration processes for the control of sulfur oxides were called for in the President's June, 1971, energy message, raising the total to six major demonstrations. Yet, neither of those processes has been selected and announced by the Environmental Protection Agency from such potential candidates as:

The Westvaco regenerable char process, which produces elemental sulfur;

The Tyco modified chamber process to remove sulfur oxides, nitrogen oxides, and particulate matter with the production of sulfuric and nitric acids as by-products;

The Atomic International's molten carbonate process, which produces elemental sulfur;

An ammonia scrubbing process, which can be made to produce sulfuric acid; and

A Venturi wet scrubbing process under development by De Seversky.

Considering the significant impact that the lack of this technology could have on increasing the availability of Appalachian and Interior Region steam coal, a crash program is warranted to develop environmentally acceptable means for generating electricity from these coal supplies.

##### NITROGEN OXIDE CONTROL

Development of technology for controlling nitrogen oxide emissions to meet established standards lags well behind that for sulfur oxides. Although there is considerable potential for improvement

in controlling nitrogen oxide emissions from the combustion of oil and gas, techniques for controlling emissions from coal-fired plants have yet to be demonstrated at even the pilot or prototype scale.

According to the Environmental Protection Agency, at the present rate of development it may well be 10 or more years before methods are available which can control nitrogen oxide emissions from powerplants. Significant reductions may well take even longer unless special attention is given to the development of reliable control alternatives for both new and existing facilities. In the interim, nitrogen oxide levels in the ambient air can be expected to almost double in the next 30 years.

On March 17, 1972, a panel of the National Academy of Engineering and National Research Council released an EPA contracted report which concluded that:

No proven process is currently available for substantial removal of nitrogen oxides from combustion stack gases once the nitrogen oxides have been formed.

The report, which deals with the Abatement of Nitrogen Oxides Emissions from Stationary Sources, the panel recommends that first priority in research and development should be given to methods of combustion modification. A substantial reduction—50 to 80 percent—in the amount of nitrogen oxides released into the atmosphere will come most economically from modifications of the combustion process rather than from stack scrubbing or absorption systems. Mr. President, I ask unanimous consent to have printed at this point in the RECORD the conclusions and recommendations of the panel.

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

##### INSERT IV

##### ABATEMENT OF NITROGEN OXIDES EMISSIONS FROM STATIONARY SOURCES

Prepared by Ad Hoc Panel on Abatement of Nitrogen Oxides Emissions from Stationary Sources, Committee on Air Quality Management, Committees on Pollution Abatement and Control, Division of Engineering, National Research Council, National Academy of Engineering (Washington, D.C., 1972)

##### SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

##### A. Summary

National and regional standards for air-quality management are being defined under the Clean Air Amendments of 1970 (Public Law 91-604). Keeping the costs of meeting these standards within bounds and minimizing the burden on our national economy will call for the best efforts and most careful planning at all levels, from individuals, civic groups, and companies to local, regional, state, and federal agencies.

The nitrogen oxides emitted from industrial sources are essentially nitric oxide (NO) and nitrogen dioxide (NO<sub>2</sub>). They are generally grouped together and, for convenience, termed NO<sub>x</sub>. Nitrous oxide, N<sub>2</sub>O, at the levels emitted by most chemical processes, is believed to be innocuous and is not included in the definition of NO<sub>x</sub>. About 53 percent of the total manmade NO<sub>x</sub> emissions in the United States are from stationary sources. (The remainder is emitted by vehicles.) The

largest stationary-source contributions are from the fossil-fuel-fired boilers of electric utilities and from industrial furnaces. At the 1970 level of control,  $\text{NO}_x$  emissions from stationary sources would approximately double by the year 2000. The need to reverse this trend is clear.

On a world-wide basis, man-made sources of  $\text{NO}_x$  produce but a tenth of that produced naturally. But the distribution of man-made  $\text{NO}_x$  is closely related to population distribution; over 60 percent of the emissions in the United States occur in urban areas. The relative contributions from stationary and mobile sources vary substantially from city to city and the proportionate contribution at ground level is presumably more from mobile sources than from stack emissions. Stack height and meteorological factors also affect the relative contributions.  $\text{NO}_x$  has a residence time in the atmosphere of three to four days. Thus, pollution from  $\text{NO}_x$  is a regional rather than a global problem.

Unlike emissions of sulfur oxides ( $\text{SO}_x$ ), which are directly proportional to the sulfur content of the fuel,  $\text{NO}_x$  is formed largely by the reaction of nitrogen and oxygen from the atmosphere at the high temperatures existing during combustion. A smaller contribution is from organo-nitrogen compounds in the fuel. *The most promising prospects for significant early reduction of  $\text{NO}_x$  in fuel-combustion stack gases lie chiefly in application of some combination of combustion-modification processes to reduce the  $\text{NO}_x$  formed. The probability that processes can be developed for removal of  $\text{NO}_x$  from stack gases is not encouraging.*

#### B. Conclusions

With regard to combustion-control modification the following conclusions are drawn:

1. Of the three fuels used in firing, gas, oil, and coal, gas allows the most precise control in the attainment of the lowest levels of  $\text{NO}_x$ . The term "coal" covers a variety of types of solid fuels varying greatly in their combustion characteristics and the nature of the ash formed. A variety of boilers and burners are required to burn these various types satisfactorily. Present emission levels from coal firing vary greatly. Of the three fuels, least is known about coal relative to minimizing  $\text{NO}_x$  formation from combustion. *A realistic objective for new plants using natural gas to be placed in operation by 1980, is a reduction in  $\text{NO}_x$  concentration to about 100 ppm from present-day uncontrolled levels, which average about 350 to 400 ppm, but range as high as 1,400 ppm. However, natural gas may not be available as a fuel for utility boilers very far into the future. For oil, the most common range today, when the combustion process has not been modified, is about 180 to 280 ppm for tangentially fired units and 300 to 700 ppm for horizontally fired units. A realistic objective for oil-fired plants placed in operation by 1980, achievable by the flue-gas recirculation and off-stoichiometric combustion, is about 150 to 200 ppm. For smaller furnaces or where low-nitrogen oil is available, there is a possibility of reaching this objective at an earlier date. Control methods are not yet established for coal. The Panel recommends a review to establish realistic objectives after more data become available in the next two or three years.*

2. Both theory and practice indicate that  $\text{NO}_x$  emissions from combustion sources can be lowered by: (a) reducing the amount of oxygen present in the flame zone, as by use of staged admission of air (or off-stoichiometric combustion), and (b) reducing the peak flame temperature, as by use of flue-gas recirculation to the flame zone. *The practicality of these abatement techniques has been developed primarily in furnaces burning gas or oil. Little has been done on coal-fired units.*

3. The principal problem in reducing  $\text{NO}_x$  emissions by the use of staged combustion is to avoid the significant increase of emissions of CO, hydrocarbons, and smoke. In addition, with coal, it is important to avoid increasing the hazard of flame-outs, the rate of corrosion of boiler components caused by a reducing atmosphere, and the percentage of unburned carbon in the ash. The applicability of the above techniques to coal firing is not well understood and it will vary considerably with burner design; e.g., flue-gas recirculation may be less effective with cyclone burners than with other burner designs.

4. The amount of  $\text{NO}_x$  formed per unit quantity of heat released on combustion can vary by a factor of about 10 depending on a number of interrelated factors: (a) the fuel (coal, oil, or gas); (b) the percentage of excess air used in combustion; and (c) the size of the furnace—as furnace sizes increase from domestic heating units to large utility boilers, the amount of  $\text{NO}_x$  formed per Btu released usually increases, probably because lower surface-to-volume ratios and increased heat-release rates per cubic foot lead to less rapid thermal quenching of the combustion process. For large utility boilers, increased furnace volume (while holding all other variables constant) will act to reduce the average temperatures and will therefore always act to reduce  $\text{NO}_x$ . However, it appears that the effect of furnace volume on  $\text{NO}_x$  formation is of secondary importance when compared with other combustion-control modifications such as off-stoichiometric combustion. This is not to say that furnace volume is insignificant. In designs in which combustion is spread out in the furnace, e.g., tangentially fired units, it seems likely that increasing furnace volume would cause a reduction in  $\text{NO}_x$ ; (d) burner design—designs that produce more intense combustion and higher temperatures, e.g., cyclone burners for coal, produce considerably more  $\text{NO}_x$  than designs that allow combustion to occur out in the furnace, e.g., tangentially fired boilers. It is impractical, however, in an existing installation to replace cyclone burners with tangential burners located in the furnace corners, for this would require nearly complete rebuilding of the furnace. It is not the fact that the burners are positioned to admit fuel and air in a tangential configuration that brings about a reduction in  $\text{NO}_x$  formation, but rather the manner in which fuel and air are admitted and mixed; and (e) load—as load is first reduced in any particular installation, the concentration of  $\text{NO}_x$  formed at first drops. With further reduction in load, the change in  $\text{NO}_x$  concentration is determined primarily by the degree to which increased air-fuel ratio may be required to prevent excessive carbon monoxide or smoke at lower loads.

5. Preliminary data exists regarding the relative importance of conversion to  $\text{NO}_x$  of fixed nitrogen in oil fuels. These data suggest that combustion of oil or coal under reducing (sub-stoichiometric air) conditions in a first stage helps reduce the amount of fuel nitrogen converted into  $\text{NO}_x$  or increases the conversion of  $\text{NO}_x$  to  $\text{N}_2$  and the combustion products, but additional research is needed.

6. Presently feasible technology that can be applied to  $\text{NO}_x$  control in utility boilers varies with the fuel utilized and the nature of the installation—retrofitting an existing boiler or designing a new boiler. Furnace design (e.g., opposed vs. tangential firing), burner configurations (e.g., cyclone vs. conventional burners), and provisions for adjusting fuel and air flows and recycling combustion gases determine the degree of  $\text{NO}_x$  control achievable in an existing installation. Research, development, and design studies are needed to determine combustor configurations and designs that will facilitate

complete combustion of coal and oil (avoiding carbon, hydrocarbon, and CO losses and preventing smoke and soot formation), and will at the same time minimize emission of  $\text{NO}_x$  (formed either by  $\text{N}_2$ - $\text{O}_2$  fixation or oxidation of nitrogen in the fuel).

7. Combined-cycle systems involving the combustion of coal or oil in combinations of gas and steam turbines are of considerable interest to utilities. Some of these may involve external coal gasification closely coupled to a turbine or boiler.  $\text{NO}_x$  emissions are expected to be low, comparable to those from natural gas, but little information is available.

8. On the basis of laboratory and pilot-scale tests, fluidized-bed-combustion boilers show promise of appreciably reduced  $\text{NO}_x$  emissions, compared with conventional coal-fired boilers. Burning of the coal is carried out at relatively low temperatures, 1400–1900° F.; tests indicate that the  $\text{NO}_x$  emissions originate almost entirely from nitrogen in the fuel. In fluidized combustors burning coal at atmospheric pressure, two-stage combustion has reduced  $\text{NO}_x$  emissions to about 70 ppm. In pressurized combustors,  $\text{NO}_x$  emissions have been reduced substantially in single-stage combustion. Fluidized-bed-combustion boilers, therefore, show excellent potential for  $\text{NO}_x$  control, and their development should be pursued.

Removal of  $\text{NO}_x$  from stack gases may offer potential for control in the future. *However, no proven process is available for substantial removal of  $\text{NO}_x$  from combustion stack gases. Conclusions based on presently available information are:*

9. Any wet scrubber system for  $\text{NO}_x$  removal will be expensive for two reasons: (a) Most of the  $\text{NO}_x$  is in the form of  $\text{NO}$ , which is relatively unreactive and insoluble. The maximum rate of absorption in an aqueous system occurs at a  $\text{NO}/\text{NO}_2$  mole ratio of unity, which requires either (1) recycle of  $\text{NO}_2$  and a method of generating  $\text{NO}_2$  from the scrubbing system, in turn requiring very high scrubbing efficiencies for substantial overall removal of  $\text{NO}_x$ , or (2) oxidation of about half of the  $\text{NO}$  to  $\text{NO}_2$  prior to scrubbing. The rate of oxidation of  $\text{NO}$  to  $\text{NO}_2$  is slow and decreases with increasing temperature; and (b) large vessels are required for scrubbing because of the large volumes of gas that must be handled and the necessity for low pressure drop.

10. Catalytic reduction of  $\text{NO}_x$  to  $\text{N}_2$  by a reducing agent as a process for treating stack gases from large utility boilers requires a sulfur-resistant catalyst if coal or oil is used as a fuel. Space velocity (i.e., catalyst activity) and catalyst life also limit this approach at present. The catalytic reduction of  $\text{NO}_x$  with ammonia or other reducing agents is being studied by several groups. Information is insufficient to assess fully the potential of any catalytic reduction methods of control.

11. Decomposition of  $\text{NO}_x$  in the absence of a reducing agent requires such high temperatures, on even the best catalysts known, as to be impractical.

The following conclusions have been reached for other stationary combustion sources and for chemical manufacture:

12. Somewhere between two percent and 21 percent of the  $\text{NO}_x$  emissions from stationary sources are produced by internal-combustion engines (burning natural gas or diesel fuel, used in conjunction with pipelines and gas plants). With diesel engines, techniques such as control of fuel injection, exhaust-gas recirculation, water injection, and alteration of combustion-chamber design, are available to reduce  $\text{NO}_x$  emissions. With gas turbines, redesign of combustors and methods of fuel injection accompanied by more fuel-lean conditions in the combustion zone should produce significant reduction in  $\text{NO}_x$  emissions.



13. More data are required on emissions from industrial process and commercial furnaces, residential furnaces and heaters, and incinerators.

14. Emissions from nitric acid plants and chemical operations may be "decolorized" (conversion of  $\text{NO}_2$  to  $\text{NO}$ ) by catalytic reduction with natural gas. A similar method can be used to reduce  $\text{NO}$  to  $\text{N}_2$  (typically from 3,000 ppm to 100 to 500 ppm), but requires careful control. Adsorption by molecular sieves has been shown in the laboratory to produce even lower emission levels but no demonstrated commercial process is yet available. Alkaline scrubbing may be used but involves liquid-waste disposal problems.

15. In some chemical processing with nitric acid, a substantial portion of the nitrogen oxides emitted may be in the form of  $\text{N}_2\text{O}$ , which is considered to be harmless.

#### C. Recommendations

On the basis of its review and in conjunction with the above conclusions, the Panel recommends that:

1. Combustion-modification studies be given first priority in research and development to control  $\text{NO}_x$  emissions. Studies of coal combustion are especially required. Studies of the effect of fuel nitrogen on  $\text{NO}_x$  emissions and the potential of flame-temperature-control techniques in oil and coal burning are also needed. A substantial reduction in the amounts of  $\text{NO}_x$  released to the atmosphere (i.e., of the order of 50 to 80 percent) will come least expensively from modifications of the combustion process rather than from scrubbing or adsorption systems to remove  $\text{NO}_x$  from stack gases.

2. Experimentation to develop firing methods for minimizing  $\text{NO}_x$  emissions be accompanied by data correlation and theoretical analyses of the data obtained in order to develop the basic understanding for configuring and designing new combustors and for choosing operational modes in a variety of applications.

3. Boiler manufacturers and utilities incorporate as much flexibility as possible in the design of new boilers to permit taking advantage in the future of increasing knowledge of the factors affecting  $\text{NO}_x$  emissions in combustion.

4. Additional work be funded on new energy-conversion concepts—such as fluidized-bed combustion, coal gasification for electric-power production, and combined-cycle gas- and steam-turbine generating plants operating in conjunction with such combustors and gasifiers—to develop their potential for reducing  $\text{NO}_x$  and other pollutants.

5. New concepts claiming potential for the economic simultaneous removal of  $\text{NO}_x$  and  $\text{SO}_2$  be evaluated carefully.

6. Evaluation of all new electric-power-generation techniques utilizing fossil fuels—including magnetohydrodynamics (MHD), fuel cells, and combined-cycle plants with fluidized-bed combustion or coal gasification—incorporating estimates of  $\text{NO}_x$  formation and the economic cost of  $\text{NO}_x$  control, begin as soon as practicable.

7. Careful consideration be given to improving present methods of sampling and analysis of  $\text{NO}$  and  $\text{NO}_2$  particularly in the presence of other pollutants from stationary sources.

8. The potential for the generation of  $\text{NO}_x$  by such sources as stationary internal-combustion engines, industrial and commercial furnaces, residential furnaces and heaters, incinerators, electrostatic precipitators, and other high-voltage equipment needs further evaluation. If the level of emissions is significant and the effect on ambient air quality is detrimental, then control techniques should be sought.

Mr. RANDOLPH. Mr. President, I am informed that the current Environ-

mental Protection Agency program on nitrogen oxides control is largely restricted to two components: the National Academy of Engineering contract I mentioned and spinoff or side benefits from its sulfur oxide control program.

It is clear from EPA reports that a drastic reduction in nitrogen oxide emissions is required if the health problems of our smog-bound cities are to be solved. Yet, limited, if any, control technology is available or under development. Here also there is a need for a major Federal commitment of funds and manpower if this Nation's air resources are to be preserved.

#### ADVANCED POWER CYCLES

Although progress can be made in developing stack gas cleanup methods for sulfur oxides and nitrogen oxides, the long-range program should be pursued with the objective of eliminating these pollutants more efficiently.

On the basis of a hearing which I chaired before the Senate Committee on Interior and Insular Affairs on February 8, it is apparent that the emphasis of EPA's long-term sulfur oxide control program must continue to be on advanced power cycles for the generation of electricity. Such methods employ coal gasification without going to the lengths necessary to produce coal gas of pipeline quality. Development of this technology is anticipated to assure the future use of the ample coal reserves of the Midwest and Appalachia. These processes not only offer pollution-free energy but an efficiency considerably higher than that of conventional powerplants, thus decreasing thermal pollution and prolonging the life of our coal reserves.

Mr. President, I ask unanimous consent to have printed at this point in the Record a summary of the National Fuels and Energy Policy Study, Senate Resolution 45, hearing I chaired on advanced power cycles which appeared in the February 1972 issue of Energy Digest.

There being no objection, the summary was ordered to be printed in the Record, as follows:

ENERGY DIGEST,  
Washington, D.C., February 1972.

#### COAL GASIFICATION

U.S. efforts, in the meantime, remain focused on advancing technology for producing synthetic gas from coal, with federal responsibility being increasingly split between Dept. of Interior and the Environmental Protection Agency (EPA).

EPA is concentrating on advanced power cycle technology, involving one-site production of low-Btu fuel gas for use in gas turbines, while Interior's programs are emphasizing synthetic pipeline quality gas that can be mixed with natural gas for distribution through existing natural gas pipelines. Administration officials told the Senate Interior Committee. Dr. Richard E. Balzhiser, assistant director for natural resources in the White House Office of Science and Technology, told the Committee that 3 major topping cycles are under consideration for continued federal R&D funding: gas turbines, magnetohydrodynamics (MHD), and alkali metal topping cycles.

"A low-Btu gasification system with hot gas cleanup feeding a gas turbine topping cycle and steam bottoming cycle is one of the more promising approaches to producing electricity cleanly and efficiently from coal,"

Balzhiser reported. He said preliminary estimates by one of EPA's contractors suggests that the cost of such a system might be comparable to the capital costs of existing power systems, without flue desulfurization systems." One of the advantages of the advanced power cycle technology is that it solves particulate and sulfur oxide emission problems and eliminates the need—and costs—for other desulfurization technologies.

However, according to Balzhiser, developing these technologies will be no overnight achievement—at least at present funding rates. Increasing the size of individual gas turbines and increasing gas inlet temperatures are two advancements that must be made to improve combined cycle performance. This calls for, he said, "a significant advancement" in materials technology as well as application of advanced aircraft turbine technology to industrial turbine design. "Significant progress in this area is expected in the next 5 years," he said, from large turbine manufacturers already working in conjunction with the Dept. of Defense (DOD) Advanced Research Project Agency, which is working to develop the technology necessary for higher temperature operations.

The Lurgi system for low-Btu coal gasification, developed and in use in Europe and now being adapted by some U.S. firms, "suffers from low efficiency and small unit size," he noted, and also "can't now be used with all of the available American coal." Interior Dept.'s Hollis Dole told the Senate Interior Committee that for utility purposes, fixed-bed gasifiers for low-Btu gasification do not appear to be "sufficiently attractive in terms of capital costs and potential efficiencies." He said the Interior Dept. does not anticipate "major expenditures" in this area. Instead, he noted, Interior has asked for \$6.4 million for the 25-50 ton/hr. entrained-bed gasifier for the pilot plant slated to be built in Homer City, Pa. (see also ENERGY DIGEST, Vol. 2, p. 22). "This system should be of sufficient interest to power utility and to coal companies to elicit financial participation in the project" as well, Dole predicted.

He said Interior hoped to develop sufficient engineering data on all three topping cycle systems "so that a utility can choose a system for the coal they use and to fit their system's needs." However, "the real (engineering) contribution will probably not come until very late in the decade and probably no real substantial contribution to the generation of electricity through these combined cycles before the mid-80s," he said.

In questioning by Sen. Jennings Randolph (D-W. Va.), EPA's Dr. Stanley Greenfield, assistant administrator for research and monitoring, admitted that EPA has received \$38.9 million between '69 and '72 which hasn't been spent; and that, although unsolicited industry proposals have been received for R&D funds for advanced power cycle R&D, EPA still has awarded no R&D contracts for it. Sen. Randolph hinted at a Government Accounting Office (GAO) probe of the matter, but will wait until after EPA oversight hearings in April before the Public Works Committee (of which he is chairman) before making a decision on the GAO investigation.

Specifically, an industry consortium submitted a proposal to EPA last year requesting some \$25 million—to be matched to \$35 million of their own money—to help fund a combined cycle plant fueled by low-Btu gas from coal. The consortium, headed by Westinghouse, has now submitted the proposal to the Office of Coal Research (OCR) in Interior Dept. in hopes of tapping funds there. Other industry members of the consortium include Bechtel Corp., AMAX Coal Co. and Public Service of Indiana.

One major reason Sen. Randolph is push-

ing so vigorously for low-Btu gasification is that without it, much of the coal in his home state of West Virginia would be unsaleable under current environmental regulations. One EPA study estimated that without coal conversion, the bituminous coal industry would lose \$1 billion a year, and 44,500 coal miners would lose jobs—one-third of them in West Virginia.

In a related development, North American Coal Corp. and Michigan Wisconsin Pipe Line Co. are jointly exploring the possibility of North American dedicating more than a billion tons of coal reserves to Michigan Wisconsin Pipe Line for eventual conversion into synthetic gas. Because of the long lead time for synthetic gas development, "It isn't too early to enter in to the planning stages of the project, including a determination of the availability of adequate coal reserves," Michigan Wisconsin president Wilber Mack told news media.

In the meantime, Washington observers are predicting that the Coal Gasification Development Corp. Act (S-1846) will pass this year despite opposition to the bill by the Nixon Administration. Hearings have concluded, and the Subcommittee on Mining, Minerals and Fuels—before which the hearings were held—is working on an interim report and hopes to get the bill approved by the full Committee soon. The House will probably take no action on the bill until the Senate has acted on it.

Mr. RANDOLPH. Mr. President, Congress specifically provided expanded authority in the Clean Air Amendments of 1970 authority for the Environmental Protection Agency to undertake research and development in the area of "improving the efficiency of fuels combustion so as to decrease atmospheric emissions; and producing synthetic or new fuels which, when used, result in decreasing atmospheric emissions."

It has been under this statutory authority that the Environmental Protection Agency has pursued, as an air pollution control strategy, the development and demonstration of advanced power cycles for the generation of electricity.

In the opinion of principals within EPA and the Department of the Interior, that advanced or combined power cycle offers the potential for assuring that eastern and interior region coals remain in the energy market. Therefore, development of the advanced power cycle is important from the standpoint of energy, environment, and economy. The Environmental Protection Agency program which was initiated in 1969 should be encouraged and adequately funded for fiscal year 1973.

The Environmental Protection Agency has estimated that the total cost for demonstrating commercial advanced power cycles for the environmentally acceptable generation of electricity from coal would be approximately \$75 million. In a joint Government-industry venture, industry contractor teams have indicated they are prepared to fund two-thirds of this cost. Several unsolicited proposals have been received by the Environmental Protection Agency.

Recently, however, the administration fragmented this program, admittedly without any assurance that the advanced power cycle will be developed to alleviate the emerging gap between coal demands and environmentally acceptable means for conversion of this resource into electricity.

Reportedly EPA requested \$25 million for fiscal year 1972 to implement this program: The funds were apparently denied by the Office of Management and Budget. Instead the Department of the Interior, with a recognized expertise on synthetic high-B.t.u. coal gas, was allotted \$3 million to pursue low-B.t.u. gas development. EPA is to pursue the development of fuel and stack gas cleaning methods and phase out its low-B.t.u. coal-gas program.

To date, however, there has been a difference between EPA's advanced power cycle program and the Department of the Interior's coal gasification program. As I understand it, the principal difference is EPA's emphasis on a combined system for the on-site production and combustion of a low-B.t.u. coal-gas, while the Department of Interior's program emphasizes the production of a synthetic pipeline quality coal-gas which can be mixed with natural gas for distribution through existing natural gas pipeline distribution systems.

Mr. President, I ask unanimous consent to have printed at this point in the RECORD materials furnished by the Environmental Protection Agency describing its fuel combustion research and development programs for assuring the environmentally acceptable generation of electricity from coal.

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

#### STATUS OF EPA FUELS COMBUSTION RESEARCH AND DEVELOPMENT PROGRAM

Combustion of fossil fuel is the major single source of sulfur oxides, nitrogen oxides, and particulates.

The principal goal of the EPA fuels combustion research program is to develop and demonstrate technology that will permit the continued use of fossil fuels to supply increasing energy demands without excessive pollution. Specific objectives include the development and demonstration of hardware that is capable of providing high efficiency combustion of fossil fuels and concurrently provide maximum availability of energy. A second objective of this program is to minimize or eliminate in the fuel preparation or combustion system the formation of sulfur dioxide, particulate and nitrogen oxide. A third objective is to develop combustion systems thus partially offsetting the cost of pollution control.

A major thrust of the EPA program is directed toward control of emissions from utility power plants. Industrial combustion of fossil fuels is the second principal source frequently making the major impact on the ambient air quality. Increasing attention is being given to the control of this segment of the fossil fuel combustion control problem.

Specific programs and their status are as follows:

#### SUBMERGED COMBUSTION PROCESS

The submerged combustion process being developed under contract with Allied Technologies Corp., 135 Delta Drive, Pittsburgh, Pennsylvania 15238, is a 2-stage combustion process which is based on the principle of combusting coal with air in a molten iron bath. The process is analogous to a basic oxygen furnace technology practiced in the steel making industry. Coal is injected beneath the surface of the molten iron bath where it dissolves freeing both organic and inorganic sulfur constituents. Iron has a strong affinity for both carbon and sulfur which consequently will dissolve readily in

the molten iron. Sulfur migrates from the iron bath to collect in the floating molten alkaline slag to form calcium sulfide. The resultant calcium sulfide can be subsequently regenerated to form a concentrated stream of  $SO_2$  or elemental sulfur.

Carbon dissolved in the molten iron is oxidized by air blown into the molten bath to form carbon monoxide. Combined with hydrogen methane and nitrogen from the gasification step, the product is a low BTU fuel gas which can be subsequently combusted in a power plant.

In addition to capturing sulfur from the fuel the molten process also retains most of the ash from the fuel. The ash becomes part of the recycling slag. Because of the contamination by the ash, slag must be continually purged from the system to avoid excessive build up. This slag is expected to have characteristics which would make it suited as a building material.

Development of the submerged combustion process has proceeded to the point that a single lance pilot scale has been constructed and is presently in operation. This pilot unit has a cylindrical bed 28" in diameter and a depth of 4 feet.

The contractor is currently conducting a test series to evaluate the several process operating variables and to characterize the performance of the device and further establish its operating feasibility. Initial results are very promising indicating that the majority of the sulfur from the fuel is captured in the slag. Indications are that  $SO_2$  emissions, less than 100 parts per million are obtained almost without regard to the initial sulfur content of the fuel. Particulate removal efficiency has not been measured.

The process continues to look quite promising. It is planned to push the development of this system as rapidly as possible into the demonstration phase.

Application of the 2-stage combustion system to existing power plants and industrial boilers appears quite promising. Insufficient data are available to definitively assess the process economics although preliminary estimates are quite encouraging.

#### FLUIDIZED BED TWO-STAGE COMBUSTION OF OIL

EPA is currently cost sharing a study with Esso England to develop a process for two-stage combustion of residual oil. Residual oil is injected into a chemically active fluidized bed containing calcium carbonate. Calcined calcium carbonate reacts with the reduced sulfur ( $H_2S$ ) from the partially combusted residual oil forming calcium sulfide which is subsequently regenerated to produce a high concentration stream of  $SO_2$ . Sulfur-free fuel gas from 150-250 BTU is produced for second stage combustion. This process has potential for both retrofit to existing power plants and to industrial boilers.

A pilot scale facility has been operated in England to evaluate the effect principle process operating variables. Extended runs of up to two hundred hours have been made. To date, results from the pilot plant study have been encouraging resulting in 90% sulfur oxide removal and efficient regeneration of the spent calcium sulfide. Further tests are needed to complete the design data requirements that must precede the scale up of this process. EPA has entered into a second contract in Esso England to complete the test program and develop scale-up design data. These studies will be completed in Fiscal Year 1973 with design of a 100 megawatt demonstration initiated in early 1973.

#### PRESSURIZED FLUIDIZED COAL COMBUSTION

During the past four and one-half years, the Environmental Protection Agency has researched the fluidized bed coal combustion system as a new technique for pollution-free combustion of coal. This work has been conducted under several contracts with Westinghouse, Pope-Evans-Robbins, BCURA England, Atomic Energy Commission (Argonne



National Laboratories) and Esso, USA. This work has progressed to the point of design of a small scale pilot facility to further evaluate the feasibility of this system. While data concerning this fluidized bed combustion concept appears encouraging as a power generation system, there is some question about its future impact on the air pollution control problems, particularly as applied as a combustion system for utilities. From the air pollution control standpoint the greatest impact could be made if the system could be applied to the industrial boiler combustion area. At present, EPA is re-evaluating the merits of the fluidized bed combustion and reassessing its potential for application to the industrial combustion problem.

If pursued further by EPA, the project has now reached a point of constructing a pilot scale facility of the 1-5 MW size. A decision on this portion of the EPA combustion program will be reached within the next month.

SOURCE.—Letter of March 9, 1972 to Senator Jennings Randolph from Stanley M. Greenfield, Assistant Administrator for Research and Monitoring, Environmental Protection Agency, Washington, D.C.

#### STATUS OF PROPOSALS TO EPA TO DEMONSTRATE ADVANCED OR COMBINED POWER CYCLES

The Environmental Protection Agency, during the period July 1, 1969–December 31, 1970, funded a technical and economic study with the United Aircraft Corporation (EPA contract 22-59-114).

The results of this study were published in December 1970 in a report entitled "Technological and Economic Feasibility of Advanced Power Cycles and Methods of Producing Non-Polluting Fuel for Utility Power Systems." As a consequence of this study three unsolicited proposals were submitted to EPA:

1. United Aircraft Research Laboratory proposal P-K 32 "Proposal for the Conceptual Design for the Gasified Coal Fired COGAS pilot plant," dated March 12, 1971.

2. Industry team consisting of Westinghouse Electric Corporation, Public Service Company of Indiana, Bechtel Corporation, American Metal Climax Corporation; proposal number 70M318A "Coal Gasification for Air Pollution Control" dated April 29, 1971.

3. Institute of Gas Technology; proposal number P17G371AK "Combined Cycle Power Generation Utilizing Fuel Gas Produced by Hydro-Gasification of Coal" dated March 1971 and revised October 6, 1971.

EPA reviewed the United Aircraft Research Laboratory report and the above mentioned proposals and came to the following conclusions:

1. The concept of advanced power cycle appears economically and technically attractive if developmental problems can be successfully solved. These problems include: (a) development of advanced low BTU gasification systems (b) development of high temperature gas turbine (c) development of high temperature gas clean-up systems.

2. The proposals were heavily oriented towards early demonstration of a current state-of-the-art plant. Although one advocated simultaneous development of advanced components, the whole program effort appeared to be underestimated. The principle advantage of an early state-of-the-art demonstration was that it appeared to be a means of attracting substantial industry funds to the overall program.

3. EPA concluded, after thorough evaluation of the proposals, that none should be accepted, but that if the program were to be pursued, it would be formulated differently from any of the proposed approaches and in a way more suitable to the EPA objectives. It was also concluded that if pursued the project should be competitively contracted.

It was subsequently decided that the Federal government will pursue development of the advanced power cycle in the following manner:

1. The Department of Interior would pursue development of a fluid bed low BTU gasifier.

2. EPA will develop high temperature gas clean-up systems and combustion systems such as submerged molten iron gasifier and 2-stage combustion of residual oil. It was felt that the component technology was sufficiently well developed and involved sufficiently low risk to expect that this stage of development could be left to industry. When OCR and EPA have developed significant improvements in gasifier and fuel gas clean-up systems, federal participation in a development/demonstration project can again be considered. The development of advanced gas turbine technology, a tremendously difficult and costly problem in itself, is expected to spin off from ongoing federal and industry sponsored programs.

SOURCE.—Letter of March 9, 1972 to Senator Jennings Randolph from Stanley M. Greenfield, Assistant Administrator for Research and Monitoring, Environmental Protection Agency, Washington, D.C.

Mr. RANDOLPH. Mr. President, I question the desirability of the transfer of EPA's activities on low-B.t.u. coal gasification to the Department of the Interior at this time. This program has been in existence since 1969 and to fracture it now could easily result in a 3-year delay in demonstration of advanced power cycles. There also is no assurance that the advanced power cycle would even be developed under such arrangements. These factors cause discouragement.

There are other unconventional uses of coal being pursued by the Department of the Interior which offer low pollution and high efficiency utilization of coals. These include magnetohydrodynamics—MHD—coal-based fuel cells, synthetic petroleum from coal, and the solvent refining of coal to yield to low-ash, low-sulfur product which can be handled as either a solid or a liquid.

Some of these methods have begun to receive modest Government research funds. The need for them is so great, however, and their prospects are so attractive in terms of benefits to the Nation's environment and energy supply, that there should be substantially increased funding for these purposes, also.

Mr. President, I ask unanimous consent to have printed at this point in the RECORD materials furnished by the Department of the Interior describing its fuels combustion research and development programs for assuring the environmentally acceptable generation of electricity from coal.

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

U.S. DEPARTMENT OF THE INTERIOR,  
Washington, D.C., March 2, 1972.

Hon. JENNINGS RANDOLPH,  
Chairman, Public Works Committee,  
U.S. Senate,  
Washington, D.C.

DEAR SENATOR RANDOLPH: In response to your letter of February 14, 1972, there are enclosed responses to 8 questions for assistance of your Committee in evaluating the hearings held February 8 on new energy technologies.

We hope this will be useful to the Committee and we are most desirous to supply

such additional information that it may require.

Sincerely yours,

HOLLIS M. DOLE,  
Assistant Secretary.

Question 1: In your prepared statement it is estimated that the Department of the Interior's program to produce pipe-line quality gas from coal contemplates a total expenditure of \$120 million over a four year period. Would you supply for the record the estimated Federal and industry funding contributions for each process by year to demonstrate these processes?

Answer: The Department commitments for pipeline quality gas (high B.t.u.) are allocated among three projects for 1972, with AGA contributions as follows:

Project and contractor (prospective contractor) and location	Fiscal year 1972		
	OCR	AGA	Total
Hydrogasification: IGT, Chicago, Ill.	\$4,670	\$2,330	\$7,000
Lignite gasification: Consol, Rapid City, S. Dak.	3,870	1,930	5,800
Bi-gas: BCR, Homer City, Pa.	7,377	3,220	10,597

Beyond 1972, the Department is contemplating the allocation of funds among seven additional projects, as appropriate, as follows:

1. Steam Iron Process;
2. Liquid Methanation;
3. Lurgi Gasifier Studies;
4. Hydrogen/Synthetic Gas;
5. Molten Iron Process;
6. Process Selection; Evaluation Designs; & Engineering Assessments Studies; and
7. Demonstration Plant Engineering, Planning, & Design.

Question 2: Would you supply for the record a description of the synthane process being developed at Bruceton, Pennsylvania, including estimated funding?

Answer: *Expenditures Related to the Synthane Process for Converting Coal to Pipeline Gas:* From 1961 through 1970, in-house coal gasification and related studies led to the development of the Synthane Process. In 1971, contracts were let to Hydrocarbon Research, Inc. (HRI) and to the Lummus Company for pilot plant research and plant design.

HRI had a larger gasifier than was available in the Bureau, and the purpose of the contract was to gasify selected coals under conditions that would provide data additional to those from the Bureau's in-house research, thus providing additional assurance that the Synthane Process would be commercially feasible.

The Lummus Co. contract was to design a pilot plant capable of converting 75 tons of coal daily to a gas of pipeline quality. In fiscal year 1973, a contract will be let for the construction and operation of the pilot plant.

#### EXPENDITURES FOR BUREAU RESEARCH RELATED TO THE SYNTHANE PROCESS

	In-house	Contract	Cumulative total
1961-69 (inclusive)	\$1,140,000		\$1,140,000
1970	878,000		2,018,000
1971	596,000	\$1,246,000	3,860,000
1972	649,000	1,500,000	6,009,000
1973	649,000	6,000,000	12,658,000

The publications entitled "Status of the Synthane Coal-to-Gas Process" and "A Process to Make High-Btu Gas From Coal" are attached.

Question 3: Would you supply for the record an indication of past and future research expenditures for the development of improved power generation systems by the Department of the Interior, including fuel

cells, binary alkali metal cycles, combined gas turbine-steam turbine cycles, and MHD (magnetohydrodynamics)?

Answer: The Interior Department has been interested in improved power systems for many years. This interest has included work on the coal-fired gas turbine and conventional power systems as well. For the past six to eight years our principal interest has been in fuel cells and open cycle-magnetohydrodynamics for central station power. This effort has been in Bureau of Mines laboratories and by the Office of Coal Research contractors. The total expenditures are approximately:

Fuel Cell.....	\$4,500,000
Magnetohydrodynamics .....	2,500,000
For FY 73 the budget includes:	
Fuel Cell (reprogrammed).....	\$400,000
Magnetohydrodynamics .....	3,700,000

We have made internal studies and evaluations of improved cycles, including:

1. MHD—steam;
2. MHD—gas turbine;
3. Gas turbine-steam turbine;
4. Steam turbine-ammonia; and
5. Alkali metal turbine-steam turbine.

Additionally, we have evaluated closed cycle MHD and liquid (alkali) metal MHD systems. The Office of Coal Research has good proposals for work in each of these important areas and work will begin during the coming year if our budget is approved. Improved power generation systems are needed on a national basis but are particularly necessary in the Eastern U.S. to meet projected demand and satisfy environmental constraints.

Question 4: The National Petroleum Council last December issued the second volume of its interim appraisal of the U.S. Energy outlook. The task force report estimates that synthetic pipeline gas produced from western surface mined coal would cost from \$.90 to \$1.10 per million BTU; from eastern shaft mined coal the price would be \$1.05 to \$1.25, or \$.15 more per million BTU.

Can it not be concluded from these economic estimates that eastern shaft mined coal has no immediate future as a supply for synthetic pipeline gas?

Is it reasonable to assume this price differential between eastern and western synthetic pipeline gas will continue?

Answer: (a) No. The price difference should be considered at the point of use. As an example, Appalachian coal converted to gas and transported to New York City would be cheaper than gas manufactured from Western coal after it had been transported to New York City. Pipeline costs are significant.

(b) We would expect the price difference at the mine to continue, but the delivered cost should continue to favor Appalachian coal by virtue of the geography.

Question 5: What specific proposals have been received for demonstration of advanced or combined power cycles for the generation of electricity? When were these received? What action has been taken? What action is anticipated?

Answer: The Office of Coal Research has received proposals for development of advanced gasification systems from the Institute of Gas Technology and Bituminous Coal Research, Inc. Additionally, preliminary exploratory proposals have been received from Westinghouse and United Aircraft. These latter proposals are related to turbine rather than gasifier, development. Proposal dates are as follows:

Proposal No.	Company	Effort	Date
536	Burns & Roe...	Design study.....	June 22, 1970.
538	BCR.....	Entrained bed.....	July 27, 1970.
563	Burns & Roe...	Fuel cell technology.....	Mar. 18, 1971.
571	United Aircraft,	Gas turbine.....	June 29, 1971.

Proposal No.	Company	Effort	Date
(1)	Westinghouse.	Gasifier and gas turbine.	July 1971.
586	do.....	Improved power cycles.	Sept. 23, 1971.
592	General Electric.	Alkali metal.....	Nov. 1, 1971.
605	Inst. of Gas Tech.	Fluid bed gasifier.....	Dec. 21, 1971.

1 None.

To date we have not taken any action with respect to these proposals because of budget limitations. However, the budget request, now before the Congress, proposes \$3 million for development of low-B.t.u. fuel gasification, \$3 million for the development of magnetohydrodynamics, and \$500,000 for the fluid-bed boiler. With these funds, we will begin work on an entrained gasifier and a fluid-bed gasifier as I indicated in my statement to the Committee. We will be seeking cosponsorship from the utility and coal industries but propose to begin the work as soon as the funds are available.

We believe our clean fuel/improved power cycle program holds great promise for improved efficiency and potential elimination of all air pollution and drastic reduction of water requirements for central station powerplants. This will allow utilities more latitude in siting their plants and allow us to mine the coal we need, convert it to power, and restore the earth. In effect, the cost of environmental controls will be offset by improved efficiency and lower capital cost for the power station.

#### EPA OVERSIGHT HEARINGS

Mr. RANDOLPH. Mr. President, as I have discussed, the Environmental Protection Agency's research, development, and demonstration program has been totally inadequate considering the anticipated impact of proposed and existing air pollution standards on Appalachian and Interior region coal supplies. The response of the electric utility industry to the problem, except for a few isolated utilities, also has left room for improvement.

Anticipated effects on coal production in the Appalachian and Interior regions could have been minimized or even avoided had both Government and industry accepted the responsibility set forth in the Air Quality Act of 1967. Their leaders should have responded as prudent men, dedicated to assuring an environmental quality which protects the health of our citizens and assures the viability of our coal resource developments.

There is reason to suspect that much of the progress that was made prior to the formation of the Environmental Protection Agency has almost been lost. There are signs that there actually has been a reduction in scope of Federal efforts for the demonstration of methods for the environmentally acceptable generation of electricity.

Mr. President, on April 10, 11, and 17 the Committee on Public Works has scheduled hearings before its Subcommittee on Air and Water Pollution to review the research programs of the Environmental Protection Agency in this critical area.

The subcommittee is particularly interested in four aspects of the accelerated research and development program required by section 104 of the Clean Air Amendments of 1970.

These aspects are the availability of alternative fuels, the efficiency of those fuels, new developments in technology to reduce emissions from combustion of fuels, and the impact of Federal support for this research on State air quality programs.

The hearings will begin at 10 a.m. each day in room 4200 of the New Senate Office Building. Witnesses invited to testify are:

MONDAY, APRIL 10

Dr. Ralph Lapp, Quadri-Sciences, Washington, D.C.

Dr. Vincent E. McKelvey, Director, U.S. Geological Survey.

Carl E. Bagge, president, National Coal Association.

TUESDAY, APRIL 11

Arthur M. Squires, chairman, Department of Chemical Engineering, City University of New York.

Carl Beard, director, West Virginia Air Pollution Control Commission.

Jean Schueneman, chief, Division of Air Quality Control, Maryland Department of Health and Mental Hygiene.

B. Hudson Milner, president, Louisville Gas and Electric Co.

MONDAY, APRIL 17

Dr. Stanley Greenfield, Assistant Administrator for Research Environmental Protection Agency.

Although these Public Works Committee hearings are of an oversight character by its Air and Water Pollution Subcommittee, they are also of particular importance to the National Fuels and Energy Policy Study, Senate Resolution 45, on which I serve as an ex-officio member of the Committee on Interior and Insular Affairs. Hence, I have discussed these matters with Senator HENRY M. JACKSON, chairman of the Interior Committee and of the fuels and energy policy study group. We are in agreement that the critical nature of these issues to the formulation of a comprehensive and effective national fuels and energy policy will necessitate that they be considered as part of the official National Fuels and Energy Policy Study.

#### FEDERAL WATER POLLUTION CONTROL ACT

HON. BEN B. BLACKBURN

OF GEORGIA

IN THE HOUSE OF REPRESENTATIVES

Wednesday, March 29, 1972

Mr. BLACKBURN. Mr. Speaker, we have considered today a bill dealing with one of the most emotional issues which we face as a Nation. The great and justified demand of the American public that abuses of our waterways be dealt with has created an atmosphere which requires action. The House today indicated that when action is demanded, action will follow in the Congress.

For myself, however, I must look upon the purposes of this bill and the ambitions of its framers and ask if the action which the Congress is taking today is as much the result of a reasoned approach as it is a nervous reaction.



Several years ago we established the Environmental Protection Agency. We granted to this new organization broad powers reaching into every facet of environmental concern, as well as into the functions of State and local governments in the area of clean environment. We combined in one agency authorities dealing with every facet of environmental protection where previously such authorities had been spread among many departments. I supported this reorganization, because I felt that the time had come when expertise in the field of environmental protection should be concentrated into one agency for a more efficient effort.

Today, we are granting to this same organization contract authority over the next 3 years totaling \$17 billion for the construction of waste treatment facilities. The Environmental Protection Agency has many fine and dedicated persons in its employ, but to assume that this relatively new agency, with very little experience, is now qualified to commit the taxpayers of the country to expenditures of \$17 billion is to me extremely questionable.

Have we forgotten so soon the lessons from the Great Society days when new agencies were created and huge sums of money placed at their disposal to abolish poverty in America. No serious student of government today argues that the war on poverty was won or that any major engagement was successful. The lesson to have been learned from that approach to government was to warn us that new agencies with broad and noble purposes, manned by dedicated and sincere people and armed with huge sums of money, did not necessarily achieve the result intended.

The responsibility of the Congress to exercise a continuing review of executive agencies is just as great in areas dealing with the environment as it is in areas dealing with social programs, or any of the other areas now considered proper for governmental action.

In the past few months my personal experience with an oversight of operations of the Department of Housing and Urban Development and its various FHA and public housing programs only affirms the necessity for alert congressional oversight into the operations of executive agencies.

I see no reason to believe that EPA with its still new organizational and untried methods, can or should operate apart from congressional oversight.

Only today, the newspapers carried an article calling to our attention the fact that the balance-of-trade deficit was more serious during the past months than during any time in the history of our Nation. This legislation could jeopardize the jobs of American workers by compelling industries to purchase equipment that is extremely costly, if not prohibitive, at a time when the economy needs a boost. Workmen without jobs, by reason of plant closings, by reason of precipitous and unreasonable demands upon their employers, or by reason of lack of orders for the goods being produced, because they are priced out of the international market, will show little

patience with a Congress that failed to take these factors into account.

It is a well-known fact that the incremental cost of achieving successively higher levels of discharge removal accelerates rapidly once your standards exceed 85 percent of the pollutants in the discharge. Former Chairman Paul McCracken, of the Council of Economic Advisers, cautioned that pollution removal costs will skyrocket as we approach 100 percent removal of all pollutants. Specifically, Chairman McCracken argued that to remove 85 to 90 percent of all discharge pollutants would cost the Nation about \$61 billion, or \$700 million for each percentage point of removal. However, when you get into the 95 to 99 percent removal range, the cost would double, or come to nearly \$120 billion—about \$6 billion per percentage point of removal. To move one more percentage point to 100 percent removal, or no discharge, would cost the Nation about 2½ times the previously mentioned amount, or \$317 billion. As you can easily see, this figure is many times more costly than if we stayed in the 85 to 90 percent range. It has been estimated that if we were somehow able to achieve no discharge over a 25-year period, the total cost to the Nation would be about \$2.34 trillion. Undoubtedly, the cost of cleaning up our rivers and streams is going to be expensive and will have a significant impact upon our economy.

In light of the above-mentioned facts, it must be remembered that the United States is today facing an ever-increasing trade deficit. American industry is finding it extremely difficult to compete in world markets. The requirement that we attempt to have zero discharge into our waterways by 1985 could cause economic havoc; unemployment would increase; American industry would not be able to compete; and the cost of goods to the consumer would rise astronomically. I believe that for this reason we should impose those limits which will still allow American industry to compete while making a serious effort to clean up our rivers and streams at the same time. It is hoped that technology will be developed within the next few years which will allow the recycling of our liquefied wastes in a manner which will alleviate the need for complete reliance upon the "no discharge" method of water pollution abatement.

As all Members of this body are aware, laws already exist to regulate what can and cannot be discharged into the Nation's waterways. The present regulations are going to have a significant effect on the Nation's economy. Recently, the Council on Environmental Quality released a report summarizing the economic impact of present pollution control requirements. They studied the effects of these requirements on approximately 12,000 plants currently operating in the industrial sector of our national economy. The study concluded that 300 of these plants will be forced to close, because of present pollution abatement requirements. These plant closings and production curtailments, because of pollution abatement requirements will have both a direct and indirect impact

on the Nation's economy. There will be a significant loss of jobs and a reduction of equity in plants and equipment. Furthermore, an indirect impact is that certain suppliers and related firms will be forced to close or reduce production. The study indicates that because of present environmental regulations, prices in the affected industries are expected to rise over 10 percent in the period from 1972 to 1976. Furthermore, the study suggests that job losses directly attributable to environmental regulations will be between 50,000 to 125,000 over the 1972-76 period. This will create a 1-percentage point increase in the Nation's unemployment rate.

Pollution control devices will have a direct effect on the national economy in the form of higher produce prices and new demands for investment in pollution control equipment. It is expected that in order to comply with today's regulations, industry must immediately invest in \$26 billion worth of additional equipment. Undoubtedly, prices will rise as a result of the cost push impact of pollution control costs. It is a well-known economic fact that as prices increase, this tends to slow down the growth of demand in the economy. Consequently, the growth of our gross national product will be severely retarded. Furthermore, unemployment will increase, because of the slow-down in real product work. The current amount balance of our international trade position will deteriorate primarily as a result of increasing domestic prices when compared with world market prices. Beyond the shadow of a doubt, foreign prices will not increase due to environmental regulations overseas. It is clear that net exports from the United States will decline.

Mr. Speaker, the reason I point out these facts regarding present regulations is to emphasize the devastating economic impact that the changes proposed in this bill would have.

There are several other portions of this bill that gravely concern me. The position of States with regard to initiative in the water pollution abatement area would be seriously eroded. We see a good example in my own State of Georgia, where the Georgia Water Quality Control Board has made continuing progress in cleaning up and preserving Georgia's waterways. I believe that the States have a valuable role which they could play in this area. However, the provisions of this bill would allow EPA to overrule many of the State programs if they did not conform to Federal guidelines. We had the situation in Georgia where the State guidelines were stronger than those of the Federal Government and where the State had to reduce its standards in order to conform with Federal guidelines.

Finally, the bill would allow the Environmental Protection Agency to make contracts for a 3-year period with different units of State and local governments for construction of waste treatment facilities. By giving this contract authority to EPA, we have placed another uncontrollable expenditure provision in our budget. In a time of continuing deficits which are being fostered because of continuing uncontrollable expenditures,

I do not believe this is the time or place to give such commitment authority to an executive agency.

We recognize a noble cause, and to demonstrate our degree of concern for the cause, we obligate the Treasury for huge sums of money with little thought as to its availability in the coffers. The uncontrolled items in the budget now constitute 71 percent of the Federal budget. Although we hope to come to grips with this most serious problem, the procedures adopted here today have made any serious congressional effort toward fiscal control almost impossible.

I believe that we should do everything reasonable to clean up the Nation's water systems and I have consistently cosponsored legislation which I feel would do this. During this session of Congress I have cosponsored legislation to increase grant authorizations for State and interstate water pollution prevention and control programs; a bill to provide financial assistance for the construction of waste treatment facilities and for the development of financial and other capabilities responsive to future waste treatment needs; a bill to strengthen and clarify the authority of the Administrator of the EPA to establish and enforce water quality standards; and the Environmental Financing Act. In addition, I have voted for the Water Quality Improvement Act of 1970 and the Water Resources Planning Act of 1971. Furthermore, I have consistently worked to preserve and protect our Nation's wetlands from unnecessary destruction by stream alteration.

Our hope to successfully upgrade the quality of our Nation's waterways lies in a continuing evolution of improved technology. I fear that the Federal Water Pollution Control Act will force commitments for huge expenditures by industry, as well as Government bodies, based on present technology which could well become obsolete in the very near future. For example, this bill has an overwhelming emphasis on limiting discharges into our streams. However, this fails to take into account the increasing appeal of recycling liquid instead of the "no discharge" approach. If we had more certain congressional oversight each year, errors in policies enunciated by this act could be more readily corrected.

In summary, I fear that Congress has gone too far in this legislation. I fear that we have granted too much authority to a relatively new Federal agency, promised far more money than we can reasonably hope to make available, and abdicated congressional responsibilities to the executive branch of the Government to a degree which is not necessary.

#### AUTO THEFT

### HON. HERMAN E. TALMADGE

OF GEORGIA

IN THE SENATE OF THE UNITED STATES

Wednesday, April 5, 1972

Mr. TALMADGE. Mr. President, there has been brought to my attention an interesting editorial column from the

Bethesda-Chevy Chase Tribune regarding the auto theft problem.

Written by Charlie Belt, formerly of Midville, Ga., the column recommends changes in title laws and auto inspection regulations in order to render car theft less profitable and less possible. Mr. Belt points out that such laws have effectively reduced the rate of auto theft in the State of Georgia.

I ask unanimous consent that the article be printed in the Extensions of Remarks.

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

#### REDUCE CAR THEFT 70 PERCENT

(By Charlie Belt)

An examination of the auto theft situation indicates a substantial reduction could result from a few changes in the title laws.

First, the principal purchasers of stolen parts should be pinpointed. Eliminate the purchaser, and the profit factor is removed. Without profit from sale of stolen property, no theft would exist.

The insurance industry is the single largest national purchaser of stolen auto parts. It has a built-in constant demand for used cheap parts to repair damaged autos. The companies also purchase parts to repair a car stripped by auto thieves. This is a vicious cycle—buying parts stolen from one car to repair or replace parts stolen from another. This then creates demand for parts again and again in a never ending circle.

To eliminate this situation would be very simple: change the title laws and automobile inspection laws. Adopt a policy that when a vehicle is damaged or has sustained a loss that would not permit it to pass the automobile inspection in its present condition, require the insurance company to execute a form of triplicate, identifying the vehicle by I.D. number, color, year, model, make and type of damage. The adjuster would send one copy to the state explaining whether or not the vehicle was declared a total loss or repairable. When totaled out, the I.D. number would have to be physically removed by the adjuster, and sent in to the state. If repairable, the adjuster would have to indicate the repairing garage, showing address and trade name when repaired. The repairing garage would also receive one copy of the form, and would have to attach a notarized affidavit of I.D. number of the vehicle used parts were removed from for repairs. New parts would have to be shown by dealer's invoice.

This would eliminate parts being sold from any vehicle without an I.D. number or record of origin of the parts. It should also be illegal to repair any vehicle without an I.D. number. This would greatly reduce the ability to sell stolen vehicles or parts.

The insurance companies will say this will increase handling cost by requiring extra paper work, and reduce the value of salvage since rebuilders would have to apply to the state for a reissue of an I.D. number.

I grant that the paper work cost will be more, but it will be more than offset by the reduction in the companies' losses brought about by reduced theft.

Also, the companies contention that salvage vehicles will not sell for as high a price as they do now is true. With a special state reissue I.D. number, everyone would be able to recognize a formerly salvaged vehicle. This would eliminate palming off a vehicle as being only used driving to church on Sunday by a nice "little old lady."

How do I know this proposal will work? The State of Georgia in 1960 was one of the states with a very high rate of auto theft, having rebuilding garages for stolen vehicles. An Act such as I have described was passed

in 1962 in that state, and the increase in auto theft has been held to about a 70% increase through 1970. The increase in Maryland and Virginia has been about 158% during the same period. It is evident that Georgia must be doing something right.

To have a question on insurance answered in this column, mail it to Charlie Belt, Certified Public Adjuster, c/o Bethesda-Chevy Chase Tribune, P.O. Box A, Bethesda, Maryland, 20014, or call 654-3496, 7-9 p.m. This service will be limited to what time and space permit.

#### DRUG TREATMENT IN PHILADELPHIA

### HON. JOSHUA EILBERG

OF PENNSYLVANIA

IN THE HOUSE OF REPRESENTATIVES

Wednesday, March 29, 1972

Mr. EILBERG. Mr. Speaker, two new methadone treatment centers were opened recently in my city of Philadelphia. Each of these centers will have a treatment capacity of 200 addicts.

While the opening of these facilities is an important step forward in the city's fight against drug addiction, it is a very small step.

Drug addiction is undoubtedly the most important domestic problem facing this country, but at the Federal level we continue to fight it with a minimum amount of resources.

The cities and States simply do not have the money to deal adequately with the problem of drug addiction. The main thrust must come from Washington.

Methadone is an answer to one part of the problem. It will help some addicts. It certainly will not help all addicts, probably not even a majority. Methadone is not a remedy for the disease of drug addiction; it is a treatment for one of the symptoms. If we are going to end the problem of drug addiction we are going to have to deal with the problems which force people to turn to drugs for relief and we are going to have to cure the social and psychological problems of the addicts so they will not go back to drugs when things get tough.

At this time, I enter into the RECORD a statement by the city representative of Philadelphia on the drug treatment situation in the city, not to show how well we are doing, but to point out how much more must be done.

The statement follows:

#### METHADONE TREATMENT CENTERS

The first of two new methadone treatment centers for heroin addicts began caring for patients today (Monday, March 27), it was announced by Acting City Health Commissioner Dr. Lewis D. Polk. Located at 830 N. Board st., the clinic is operated by the Health Department's Office of Mental Health and Mental Retardation.

The second methadone clinic operated by the Health Department, at 716 South st., is expected to begin functioning within the next two to three weeks, Dr. Polk said.

Funds for the establishment of the centers come from a \$293,835 grant from the Law Enforcement Assistance Administration of the U.S. Department of Justice, plus \$125,930 matching funds from the Office of Mental Health and Mental Retardation.

Each of the new centers will have a treatment capacity of 200 addicts, 50% of whom will be referred through the criminal justice



system and 50% enrolling on a voluntary basis, according to Dr. William Wieland, Director of the Addictive Diseases Division of the Office of Mental Health.

"Approximately 1,000 addicts are already being treated in three other methadone maintenance clinics housed in City health facilities and staffed by West Philadelphia Mental Health Consortium," Dr. Wieland noted.

"Another 700 are enrolled in methadone programs at St. Luke's Hospital, Mantua Halfway House, and Rehabilitation A.I.D. In addition, addicts are receiving therapy from other treatment programs in the city that do not utilize methadone but offer alternative approaches to drug abuse and addiction.

"We are working to expand both the methadone and the alternative treatment programs in the coming year, since all of the present programs have long waiting lists and some areas of the city have no programs at all at the present time," he said.

Heroin addicts who are 18 years or older are eligible for treatment at the City's methadone treatment centers. The center at 830 N. Broad st. will care for addicts who live in the Hahnemann Community Mental Health Center catchment area, between the Delaware and Schuylkill and from Montgomery ave. to Chestnut st. The center at 716 South st. will treat those who live in the Pennsylvania Community Mental Health Center catchment area, south of Chestnut st. and east of Broad.

The new City centers will be open seven days a week—from 8 a.m. to 6 p.m. Monday through Friday, and from 10 a.m. to 1 p.m. Saturday and Sunday.

Each methadone treatment center is staffed by a director, psychiatrist, social worker, registered nurses, ex-addict counselors, a rehabilitation counselor, and supportive clerical staff.

When an individual comes to the center for the first time, he will be registered and given an appointment for a medical and psychological evaluation, prior to any methadone being prescribed. In addition to the methadone medication, Dr. Wieland stressed that treatment will involve group therapy, peer pressure groups, and marital and family counseling groups.

The methadone maintenance program located at Philadelphia General Hospital and operated by the West Philadelphia Mental Health Consortium is currently caring for 600 patients, most of whom live in West Philadelphia south of Market st. About 220 residents of West Philadelphia north of Market st. are being treated for addiction at the clinic located in District No. 4 Health Center, 4400 Haverford ave., operated by the Consortium on behalf of the Philadelphia Psychiatric Community Mental Health Center.

The Consortium also staffs the clinic presently located in the District No. 2 Health Center, Board and Morris sts., on behalf of the Jefferson Community Mental Health Center. Approximately 200 residents of the area south of Chestnut st. and west of Broad st. are enrolled in that clinic.

## NATIONAL WEEK OF CONCERN FOR AMERICANS WHO ARE PRISONERS OF WAR OR MISSING IN ACTION

**HON. QUENTIN N. BURDICK**

OF NORTH DAKOTA

IN THE SENATE OF THE UNITED STATES

Wednesday, April 5, 1972

Mr. BURDICK. Mr. President, although U.S. soldiers now held prisoners of war or missing in action in Southeast Asia are never far from the minds of

our people, this country has just observed a National Week of Concern for these men and for their welfare.

I sponsored the resolutions creating this remembrance both this year and last. Last year, I had hoped that the observance would be the only one. I am saddened and disappointed that 1 year later we are still in the same situation, still paying tribute to the bravery of men locked up thousands of miles away.

We are still concerned about the same issues as we were last year, for the conditions of our POW's and MIA's have not improved. Although the North Vietnamese endorsed the Geneva Accords regarding the treatment of prisoners of war in 1957, they have ignored those humanitarian agreements.

The North Vietnamese and Vietcong have continually refused to give any information about their prisoners. We do not know whom they hold, who is missing, who is sick, or who has died. They refuse to exchange seriously ill prisoners or permit proper medical treatment. International organizations have been refused access to the prisoners, and the prisoners have been denied the right to correspond freely with their families.

This conduct is hardest on the families of those missing or held prisoner. The suffering they must feel is almost beyond comprehension. Still, they have maintained the courage to work for the freedom of their loved ones in every way, through every channel. Throughout it all, they have been brave, courageous, and dignified.

If I were a member of one of those families, I do not know that observing a National Week of Concern would bring me much peace of mind. The attention it focuses on the matter is important, but strong, positive action is needed. We must continue to work to better the conditions for our POW's and for the safe return of every one of our men.

The surest and quickest way to bring this about is to set a date for the withdrawal of all American troops, contingent only on the release of our prisoners. I have voted for such a provision over and over again. The majority of Senators have also done so. In spite of our actions and the feelings of hundreds of thousands of Americans, the war drags on. More American soldiers are killed. More are missing. More are taken prisoner.

The fixing of a definite date for withdrawal would give renewed hope to our prisoners and their families. I deeply and sincerely hope that the President will agree to this step. History has shown that the release of prisoners comes after, not before, a commitment to withdraw.

This National Week of Concern is a sad reminder to all Americans to rededicate their efforts to end U.S. involvement in Southeast Asia and bring our troops—all our troops—home safely and soon. I would hope that the people, the Congress, and the President will heed this reminder and work to insure that this will be the last Week of Concern we must proclaim.

The city of Fargo, N. Dak., has also declared this week as a Week of Concern. I ask unanimous consent that the proclamation be printed in the Extensions of Remarks.

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

### PROCLAMATION

Whereas, over 1500 members of this nation's Armed Forces are currently held prisoner or declared missing in action in the conflict in Southeast Asia, and

Whereas, the government of North Vietnam has continuously refused all efforts by this nation and the International Red Cross to secure repatriation or humane treatment for these men, and

Whereas, never in this country's history have its fighting men been held for so long, with little hope for release and with severely limited contact with their families, and

Whereas, it is incumbent upon the citizens of this great country to support its fighting men held as prisoners of war or declared missing in action;

Now, therefore, I, Herschel Laskowitz, do hereby declare the period of March 26-April 1, 1972, as a "Week of Concern" for our POW/MIA's, and I call upon the citizens of this city in remembering these men through prayer and further through letters to our elected representatives, and I join with the families of these men when I ask of you:

Don't Let Them Be Forgotten.

## AN INTERVIEW WITH GREEK AMBASSADOR BASIL VITSAXIS ON AMERICAN-GREEK RELATIONS—RARICK REPORTS TO HIS PEOPLE

**HON. JOHN R. RARICK**

OF LOUISIANA

IN THE HOUSE OF REPRESENTATIVES

Wednesday, March 29, 1972

Mr. RARICK. Mr. Speaker. I recently reported to my people in an interview with the Honorable Basil Vitsaxis, Ambassador of Greece to the United States, on Greece and relations between Greece and the United States. I insert the report at this point:

RARICK REPORTS TO HIS PEOPLE IN AN INTERVIEW WITH GREEK AMBASSADOR BASIL VITSAXIS ON GREECE AND GREEK-AMERICAN RELATIONS

RARICK. Americans have good cause to be concerned over the increasing domination of the Mediterranean by the Soviet Navy. From North African countries in the West to Turkey in the East, deep water ports, support facilities and air bases once available to the United States and to NATO have been closed. Anti-Americanism is increasing and American warships are no longer welcome to make good-will visits to many once friendly ports.

One of the very few exceptions to this unfriendly attitude toward the United States is the Kingdom of Greece. The history of Greece has been the story of a constant struggle to keep burning the flame of liberty. Greece stands today as the greatest bulwark against communist tyranny in all of Europe. Were it not for the present friendly Greek Government the U.S. Sixth Fleet might well have been excluded completely from the Mediterranean.

Today, we are very privileged to have as our guest to talk about Greece and Greek-American relations His Excellency Basil Vitsaxis, the Ambassador from Greece to the United States and a personal friend of mine during his assignment in Washington over the past two years. Welcome, Mr. Ambassador, into the homes of our TV viewers.

Mr. Ambassador, the Soviet Union just last month reportedly warned the United States that its plan to establish naval bases in Greece can only provide a corresponding reac-

tion from the Soviets. A State Department spokesman rejected the Soviet allegation that the U.S. is setting up naval bases in Greece. What can you tell us without violating military security, of course, about the U.S. naval facilities in Greece and any arrangement between our two countries regarding the United States Navy.

VITSAXIS. Well, first of all let me thank you, my dear John, for allowing me to be on your program. Coming to your question, I believe it is only proper to first say a few words on the importance of this sea, in the framework of World Strategy.

The Mediterranean stretches from the southern flank of Europe to the northern shores of Africa and represents a shortcut for some very important nations, between the Indian Ocean and the Atlantic. Three water-gates, i.e. Gibraltar in the West, the Bosphorus and the Dardanelles in the North-East and Suez, in the South-East, render this waterway extremely vulnerable. Some of the richest oil producing countries are largely dependent for their communications on this sea and, it is needless to add that, one of the hottest spots of today's world, is the Middle East.

All this make the Mediterranean—a the least one can say—a very important sea.

The Soviet military and, consequently, political presence in this area is a new phenomenon and is, naturally, watched with ever increasing concern by the Western powers. The Western presence in this sea is represented by the NATO Naval forces, the backbone of which is the 6th United States fleet.

Greece belongs to NATO and is wholeheartedly committed to the cause of common defense. It was then only natural for my Government to give its approval in principle to the request formulated by the friendly and allied United States Government to establish home port facilities in the Athens-Piraeus area for the 6th Fleet.

I wish to take this opportunity to stress the fact that home porting facilities are not military bases. They aim at facilitating the officers and the crews, serving in the 6th Fleet, to meet more often and easier with their families without having to sail back to the United States.

The Soviet Union, I know, has launched a protest alleging that the United States are building new military bases in Greece. This allegation, as I said, does not correspond to the facts; but I wish to underline in this respect that though no American military bases are built in Greece, Soviet military bases—in the true meaning of the term—are being sought in the area—mainly on the Northern shores of Africa. I really cannot see how one can protest for even imaginary intentions of somebody else, while he himself not only entertains such intentions but also puts them into action.

RARICK. I think that it is safe to say that in Greece your people still like America and Americans and anyone who loves freedom is still welcome.

VITSAXIS. The ties between the United States of America and Greece are long-standing bonds of warm mutual friendship. They were hammered since our war of Independence of 1821. At that time many Americans came and fought in Greece and, by the way, it is noteworthy that Americans "fighting abroad for the cause of freedom" are not a new phenomenon, since, as early as in the 19th century, these brave sons of the United States came as volunteers to my country, fought shoulder to shoulder with us and died on our battlefields for the cause of our independence.

The ties between Greece and the United States were eventually strengthened during the two World Wars, during the communist invasion of my country and during the Korean war. On the other hand, many Greeks have come and settled in the United States, thus representing a living bond between the two countries.

I am happy to state, my dear John, that the relations between the Governments of our countries, truly reflecting the relations between our peoples, are excellent.

RARICK. Mr. Ambassador, could you tell me what was the effect of the recent realignment of currencies on the drachma and perhaps, more generally, what is the present state of the economy of Greece?

VITSAXIS. Well, let me first start with the second part of your question. If one takes April 1967 as a starting point, the Greek economy completes five years of sustained and rapid economic development. This has been particularly true during the last three years, when the national income grew by over seven per cent on the average. Mind you, this rapid economic growth was accompanied by a high degree of price stability, in spite of steadily rising prices in foreign countries and world inflation. Economic growth and industrialization has been dependent on imports, as most capital equipment has to be imported. Thus, imports have been increasing with the widening trade gap reflecting the accelerating growth and the ensuing higher standards of living. However, the inflow of foreign credits and investments, as well as remittances from Greeks working abroad, earnings of the merchant marine and the unprecedented receipts from tourism, more than kept pace with Greece's external trade deficit. In other words, the current account deficit had been more than offset by capital inflows, especially in 1971 and during the first months of this year, leading to a substantial increase in the total reserves of our Central Bank.

Referring to the latest well-known realignment of currencies in the world, I wish to state that my country did not change the purity of the drachma vis-a-vis the dollar. By allowing our currency to follow the dollar, we have improved our competitive position with regard to other European countries and especially the major countries of Western Europe, which constitute our main export markets.

It is worth noting that at the present stage of our development there is a great need for capital imports and the mobilization of our internal resources. From that point of view, the fact that the influx of private savings, both in local and foreign currencies, into the Greek banking system is at an all time high, is most encouraging. May I add, in this respect, that the confidence shown to the Greek economy and to the stability in my country by the international capital, as evidenced by this influx, is a clear proof of the healthy situation in Greece. As is well known, international capital does not obey any laws other than those of cool, objective appraisal and reason.

If the past is to serve as a guide, the dynamism of the Greek economy in recent years and its highly development-oriented character cannot but lead to an optimistic prognosis of the future of our economy.

Let me also remind our viewers that, like the United States, Greece maintains an economic system that gives private initiative and enterprise full opportunities and our trade is fairly liberal and in accord with the rules of the General Agreement of Tariffs and Trade.

RARICK. Mr. Ambassador, our people hear from time to time conflicting reports about your country today. On several occasions I have referred to Greece to my people as the last remaining bastion of peace in the entire Mediterranean as being pro-American and anti-Communist. Then, of course, our people also hear the small but very vocal minority in our country who for some strange reason seem to get front-page and wide press coverage as they constantly refer to the government of Greece as some kind of dictatorship. I believe it'd help our viewers to have a correct understanding of Greece today if they knew the background of how the present Greek government came to power. Would

you care to enlighten our viewers as the representative of your country?

VITSAXIS. Thank you for asking this question because it will allow me to shortly refer to what happens in my country.

Following the war, the communists tried to take over Greece . . .

RARICK. You are referring to World War II?

VITSAXIS. Yes, World War II.

They wanted to control the country because of its strategic importance in the eastern basin of the Mediterranean. The world was led to believe, that it was an internal upheaval. In reality, as proved by an on the spot investigation of a special United Nations Committee, it was a camouflaged invasion from the North (we had similar phenomena in Korea and in North Viet Nam). The Greek people vigorously fought the communists. Our American friends gave us material support and advice; but we alone provided the necessary blood . . . Rivers of blood.

For four long years we fought to stay out of the Iron Curtain. Four years which brought destruction and catastrophe to our country beyond any description. The communist invasion was eventually crushed and we hoped that a brighter tomorrow was to come. The communists, nevertheless, did not abandon their aims. They only changed their tactics. Since they had not succeeded in conquering Greece by the force of arms they tried other, more subtle, though equally dangerous ways. They started infiltrating into the public offices, into the various services, hoping to get control of our country. The situation worsened with every passing year so that in the years immediately preceding 1967 the country was plunged into chaos. Democracy had virtually ceased to function; the economy was paralyzed by continuous strikes; and disorders broke out in all major cities, causing a well understood anxiety to the people of my country.

Something had to be done if Greece, as a free country, was to be saved. The armed forces of Greece did it. They intervened on April 21st, 1967, and took complete control of the destinies of the country. Their intervention was motivated by the desire to save democracy, not to destroy it. Immediately after the new Government came to power, it proclaimed to the people that it did not intend to establish a new form of government, dictatorship or otherwise. What it promised and what it is step by step promoting is the establishment in Greece of a real democratic life under the guarantee of the Constitution. Among the first acts of the new Government was to establish a Committee of highly competent persons, Professors of Universities, Magistrates and so on, to draft a new Constitution. The Constitution was publicly debated and then put to a vote. The Greek people by an overwhelming majority accepted this Constitution at a national referendum which took place in 1968.

May I, my dear John, take this opportunity to stress the fact that the Constitution, which is actually the fundamental Charter under which political life in my country evolves, provides for elections by secret ballot and for multi-party representation of the people in the Parliament. It also provides for all checks and controls which are to be found in every Constitution of western type democracies. Let me quote from Article 2, which reads:

"All powers emanate from the people, exist in favor of the people and the nation and are exercised by the manner prescribed by the Constitution."

The same Constitution guarantees all human freedoms. In some instances it provides for even a greater protection of human rights than does the International Convention of Rome on Human Rights. In short, the political system which is prescribed by our Con-



stitution is a western type democracy and I do not think that anybody who would examine it could come to a different conclusion. Many, for reasons which I do not want to discuss now, continue to label Greece as a "dictatorship". To them I should like to say that Greece is the country where democracy was born and Greece continues to be the home of democracy.

RARICK. In listening to your explanation, Basil, I think its interesting to note that the Communists who would seemingly try to call or smear Greece as a dictatorship certainly don't practice in their own country what they preach about Greece. In Russia, for example, elections are a farce. The people have a right to exercise the ballot but they can vote for no one except a Communist. There have been some charges made by this same vocal minority, probably friends of the Soviet Union, that the Greek government does not allow freedom of the press. Would you care to comment on this?

VITSAXIS. Well, this allegation is less and less put forward today even by the staunchest opponents of the Greek Government. The flow of foreign tourists in Greece has allowed many people to see for themselves that censorship does not exist in my country. Our newspapers and magazines are also read abroad and it is easy for everyone to see that the press is free in Greece. Our Constitution guarantees the freedom of the press and adds: "Censorship and every other preventive measure is prohibited."

Our newspapers express freely their opinion with regard to the Government and to the course followed by it. Some are favorable, some are critical, as is the case in any free country.

RARICK. We also hear, Mr. Ambassador, about Greece being under martial law and that your country has political prisoners today. Would you care to comment on that?

VITSAXIS. I think I should start by explaining what is meant by martial law and what is the situation in my country with regard to this.

Martial law is in any country a legislative measure applied whenever certain conditions of national emergency prevail, whereby all human rights, with very few exceptions, are suspended. This happened immediately after the revolution of the 21st of April 1967. Then, little by little, and as the situation in Greece became less dangerous, human rights, the one after the other, were re-established and guaranteed. The only provision of the all embracing martial law which remained in force during the last years was the provision according to which a very limited number of crimes—mostly those against national security—should be judged not by ordinary Courts—as the case would be under the Constitution—but by Court Martials. This only last remnant of martial law was also lifted a few months ago for the quasi-totality of the country. It remains in force in very small areas and I am confident that in those areas also it will soon be lifted.

From what precedes you can see, my dear John, that the so often repeated allegation that my country is living under martial law is totally unfounded.

RARICK. Are there any political prisoners in Greece today?

VITSAXIS. I am glad to tell you in the most categorical way that there is not a single political detainee in Greece today. In order to better understand the question of political detainees I wish to briefly refer to the history of the matter.

During the communist invasion and immediately after it, various Governments of Greece have applied a law, voted by the Greek Parliament, according to which persons who were considered dangerous for the national security—because of their past record or because of their activities—could be confined in certain places in order to prevent them from undermining the security of the country. Such political detainees existed in

Greece in the 50's and in the 60's. Their number—quite substantial—was decreasing every year. It was substantially increased again immediately following the revolution of the 21st of April 1967. This was quite normal if one takes into account the fact that the revolution took place in order to stop the downhill course of the country.

At this point, two facts should be stressed: (a) That political detainees existed in Greece long before the revolution of the 21st of April 1967,

(b) That their confinement was—before as well as after the revolution—in accordance to a long-standing Greek law voted by an elected Greek Parliament and applied by the Governments of Greece both before and after the revolution.

It should also be noted that in the years following the revolution of 1967 the decline in the numbers of political detainees was much faster than before, and finally all confinement places were completely dismantled and all political detainees set free.

This is the truth, dear John, about the so-called question of political detainees in Greece.

RARICK. Any tourist who would care to go to Europe this summer to visit Greece would be safe in their property and their protection? They'd have no threats against them?

VITSAXIS. My answer is yes. And may I add that Greece is expecting all her friends. They will find at her shores not only safety but also the traditional hospitality for which Greece is known all over the world.

RARICK. And they would be welcomed. Mr. Ambassador, it has indeed been a pleasure having you on our program. I only wish we had more time. I welcome you to visit Louisiana. As you know our ties are very close with your friendly people.

#### A NATIONAL COACHES DAY

### HON. ROBERT P. GRIFFIN

OF MICHIGAN

IN THE SENATE OF THE UNITED STATES  
Wednesday, April 5, 1972

Mr. GRIFFIN. Mr. President, I am pleased to join the distinguished senior Senator from Texas (Mr. Tower) in cosponsoring Senate Joint Resolution 213, authorizing the President of the United States to issue a proclamation which would designate a "National Coaches Day."

The great Knute Rockne once gave Frank Leahy this advice:

Coaching is a life of heartaches, but it's the life for you and me.

Along with many heartaches every good coach carries with him the personal satisfaction and knowledge that, in a very special way, he is molding among his students the capable self-reliant, team-spirited, and mature young men and women who will be the future leaders of our Nation.

Participation in athletics not only develops the skills required for a particular sport, but it also builds respect for opponents as well as a sense of fairplay. Experience on an athletic team teaches not only that great effort is necessary to achieve victory in competition, but also that there is much to be gained even in defeat when one does his best.

From the early days of Greece and Rome, it has been noted that young people mature into stronger adults if they

set high goals for themselves and work steadily toward them. In so doing, they overcome obstacles which add to their strength of character and to the development of their native and acquired abilities.

The coach is actively involved in molding the character of youth from the time preseason tryouts begin until the last play of the season's last game. He is a teacher; but he must also be a good student—a student of human nature; of the differences among individuals and the various ways in which they respond to direction and leadership.

A good coach is capable of welding together the personalities and abilities of a variety of individuals into a team that functions as a unit. Indeed, the greatest contribution to the Nation of a good coach is the development in youth of a sense of teamwork.

And, in the final analysis, it is teamwork that makes possible much of what we call civilization.

Mr. President, I believe the joint resolution I have cosponsored is worthy of favorable consideration by Congress. I believe that the coaches of our Nation merit and deserve this kind of recognition.

#### TORRANCE SCHOOL DISTRICT RECOGNITION BANQUET

### HON. GLENN M. ANDERSON

OF CALIFORNIA

IN THE HOUSE OF REPRESENTATIVES  
Wednesday, March 29, 1972

Mr. ANDERSON of California. Mr. Speaker, the hope of the future lies in our educational system, and the very heart of our educational system is the personnel who make an individual school a vibrant, living place of learning.

The teacher, the administrator, the secretaries, the custodians—all have an important role in educating the youth of today so that they will be prepared to meet the challenge which lies ahead. All must dedicate themselves to a cause which is above personal renown, a cause which does not bring riches or fame, but rather a cause which arouses the curiosity and results in a student's inspired feeling to make this earth a better place.

This is the reward of those who toil to educate our children. For, as the author Henry Brooks Adams said:

A teacher affects eternity; he can never tell where his influence stops.

The reward is the future.

To express our appreciation to those dedicated people who have such a powerful influence in shaping the future, the Torrance, Calif., Unified School District has scheduled a recognition banquet to honor 29 persons who are retiring after years of service.

All of us owe a special debt of gratitude to the school personnel, and I would like to offer a word of thanks to all of those who have given so much of themselves to direct our children toward tomorrow with a spirit of helping their fellow man.

Those retiring are: Mrs. Mary Rutherford, Mrs. Florence Porter, Mrs. Emily Young, Mrs. Florence Pratt, Mrs. Rosa

Malott, Mrs. Helen Carpenter, Mr. George Marich, Mr. Raymond Collins, Mrs. Mary Miller, Mr. Gordon Williams, Mrs. Margaret Gaedke, Mrs. Virginia Bradshaw, Mrs. Virginia Booher, Mr. Richard Puschel, Mrs. Merle Laskaris, Mr. Arie Blackman, Mrs. Velora Murphy, Mr. Jesse Gladgo, Mrs. Bernice McCoy, Mrs. Evelyn Brosius, Mr. Howard Bales, Mr. Jerome Peoviak, Mrs. Faye Hawks, Mr. Theodore Diamond, Mrs. Margaret Meyer, Mr. Charles Stimson, Mr. Roy Bravick, Mr. Vernon Briegel, and Mrs. Inez Thompson.

Mr. Speaker, their influence will never stop; it can be seen in future generations for eternity.

Because of the dedication of these individuals, and the philosophical tenets of the Torrance Unified School District which teach that "education is a dynamic, evolving relationship with subject matter the means, man the product, and society the result," we can look to the future with great optimism and hope.

For this, our entire community and country is eternally grateful.

## JERUSALEM

### HON. BENJAMIN S. ROSENTHAL

OF NEW YORK

IN THE HOUSE OF REPRESENTATIVES

Wednesday, March 29, 1972

Mr. ROSENTHAL. Mr. Speaker, in an age of brotherhood and enlightenment, it is all the more appalling to see the ugly head of bigotry raised in high places.

So it is that the Palm Sunday sermon of the Very Reverend Francis B. Sayre Jr., dean of the Washington Cathedral, is deeply disturbing and most out of place. His denunciation of Israel as an "oppressor" in Jerusalem was not only unfortunate but grossly inaccurate.

I would hope, for his sake, that Dean Sayre was speaking not so much out of prejudice as out of ignorance.

His allegations of mistreatment of Israeli Arabs is unjust and untrue. Since Israel assumed political control over both the old and new sections of Jerusalem, the Holy City has been open to persons of all lands and all religions. As the Washington Post points out in an editorial today:

Freedom of religion and open access to the shrines in Jerusalem are better protected now, by the Israeli state, than at any time in memory.

Has Dean Sayre so conveniently forgotten that from 1948 to 1967 the Arab rulers of East Jerusalem denied Jews the right to visit the holy places of their religion and kept Moslems who were Israeli citizens from going to their own religious shrines?

Where was Dean Sayre during those years when the Jordanians destroyed all but one of the 35 synagogues in the Old City, desecrated Jewish tombs, barred Jews from visiting the cemeteries of their friends and families, and evicted or killed the Jewish residents of East Jerusalem?

Why did his Palm Sunday sermon ignore these facts? Why did he fail to

point out that Jerusalem today is a truly international city, open to all persons, regardless of their faith and their nationality?

I am inserting in the RECORD news reports of Dean Sayre's sermon plus editorial and reader reaction from two publications, the Washington Post and Jewish Week. I also am including a synopsis of a sermon by Rabbi Bernard H. Mehlman of Temple Micah in Washington, D.C.

[From the Washington Post, Mar. 27, 1972]

#### ISRAEL CALLED OPPRESSOR OF JERUSALEM

(By William R. MacKaye)

Once-oppressed Israelis have become the oppressors of Jerusalem, the Very Rev. Francis B. Sayre Jr. charged yesterday in a Palm Sunday sermon at Washington Cathedral.

Emphasizing his conviction that contemporary events in Jerusalem are simply one of many examples of "the moral tragedy of mankind," the Cathedral dean exclaimed:

"What a mirror, then, is modern Israel of that fatal flaw in the human breast that forever leaps to the acclaim of God, only to turn the next instant to the suborning of his will for us."

Dean Sayre recalled that many people around the world cheered in 1967 when Israeli forces "surged across the open scar" that divided Arab Old Jerusalem from the Israeli sector.

"But now oppressed become oppressors," he declared. He asserted that Arab residents of Jerusalem are deported or deprived unjustly of their land and forbidden to bring their relatives to settle in Jerusalem.

Arabs "have neither voice nor happiness in the city that is the capital of their religious devotion, too."

The dean indicated that he was basing his position largely on the views of Israel Shahak, a Jew and professor at Hebrew University, who has lived in Jerusalem for 18 years. He is a survivor of the Bergen-Belsen concentration camp.

Dean Sayre quoted Shahak's assertion in the current issue of Christianity and Crisis, a bi-weekly journal of religious and social opinion, that Israel's annexation of East Jerusalem is "an immoral and unjust act."

Until the non-Jews of Jerusalem are given freedom, Shahak wrote in a passage quoted by the dean, "the present situation of one community oppressing the other will poison us all—and us Jews first of all."

Dean Sayre's comments on contemporary Jerusalem were contained within a longer reflection on the religious significance of the holy city, which forms a traditional topic for Palm Sunday. Palm Sunday recalls for Christians the day that Jesus entered Jerusalem and, only days before his crucifixion, was hailed by his followers as a king.

At the Episcopalian Cathedral a special procession including players of shofars, the rams' horns sounded by Jews on solemn occasions, wound through the gothic arches in a ritual re-enactment of Jesus' action.

"We are Jerusalem this morning," the dean declared to worshippers. And he warned them that this was an identity of sorrow as well as of joy.

"Jerusalem," he said, "in all the pain of her history, remains the sign of our utmost reproach: The zenith of our hope, undone by the wanton meanness of men who will not share it with their fellows, but choose to kill rather than to be overruled by God."

[From the Washington Post]

#### DEAN SAYRE ON JERUSALEM

If Dean Sayre's choice of words was unfortunate, in his Palm Sunday sermon at Washington Cathedral, his choice of a target was

even more deplorable. He was on firm ground as long as he devoted himself to the moral shortcomings of mankind in general, as exemplified in the betrayal of Christ in Jerusalem. But when he turned the sermon into an intemperate denunciation of current Israeli policy in Jerusalem, and coupled it with a highly unjust allegation of mistreatment of Israeli Arabs, he committed an error of a particularly serious character.

The status of Jerusalem is neither less complex nor more easily soluble than any other point of contention between Israel and the neighboring Arab states. As a political issue it is open to vigorous debate, both in Israel and throughout the world. Here it suffices to say that the dean's description of the Israeli treatment of its Arab minority is not supported by most of the Christians who speak with authority on the subject. We print on the opposite page today a sample of the letters that we have received, and several of them address this point.

Dean Sayre's purpose was evidently to chide the Israelis for asserting political control over East as well as West Jerusalem, and its special meaning to three faiths, and to reproach the world's nations in general for their lack of support for the United Nations. But freedom of religion and open access to the shrines are better protected now, by the Israeli state, than at any time in memory.

But Dean Sayre was not delivering a political lecture. He is a high clergyman who, in a solemn celebration, denounced Israel as re-enacting "the moral tragedy of mankind" in the city of Jerusalem: "Now the Jews have it all. But even as they praise their God for the smile of fortune, they begin almost simultaneously to put Him to death." The words run painfully close to a very old, very familiar line of the worst bigotry. Undoubtedly Dean Sayre did not intend to evoke this recollection. But it is profoundly dangerous all the same. The gun is loaded, whether the dean acknowledges it or not. As the letters published here today indicate, a number of prominent clergymen have publicly dissociated themselves from the sermon. Dean Sayre himself might usefully reconsider his words.

[From the Jewish Week]

#### PALM SUNDAY SERMON STIRS PROTEST THROUGHOUT NATION—DEICIDE THEME USED BY DEAN AN ATTACK ON JEWS

A reference in a Palm Sunday sermon at the Washington Cathedral to Israel as an "oppressor" of Jerusalem who would prefer to "kill rather than to be overruled by God" has stirred a storm of indignation among Jews and friendly Christian church people throughout the country.

The sermon was delivered by The Very Rev. Francis B. Sayre, Jr., a grandson of President Woodrow Wilson and Dean of the Cathedral. Sayre cited events in Jerusalem as one of many examples of "the moral tragedy of mankind" and he added:

"What a mirror, then, is modern Israel of that fatal flaw in the human breast that forever leaps to the acclaim of God only to turn the next instant to the suborning of his will for us."

But what roused the greatest indignation in the sermon was the statement that "Jerusalem, in all the pain of her history remains in the sign of our utmost reproach. The zenith of our hope, undone by the wanton meanness of men who will not share it with their fellows, but choose to kill rather than to be overruled by God."

The clergyman said "the oppressed had become the oppressors" and that Arabs "have neither voice nor happiness in the city that is the capital of their religious devotion, too." He said he was basing his position largely on the views of Israel Shahak, a professor in chemistry at the Hebrew University of Jerusalem, who said he is a Jewish survivor of the Bergen-Belsen concentra-



tion camp and has lived in Jerusalem for 18 years. His opinions appear in the current issue of Christianity and Crisis, an organ of social and religious opinion. Shahak called Israel's unification of Jerusalem "an immoral and unjust act."

The ancient anti-Jewish deicide theme was also suggested in Dean Sayre's sermon when he said:

"Around the world, 'Hosannah' was echoed as Jewish armies surged across the open scar that used to divide Arab Jerusalem from the Israeli sector. Now the Jews have it all.

"But even as they praise God for the smile of the future upon them, they begin almost simultaneously to put Him to death—as if Jerusalem could ever be altogether theirs—or any one's."

Dean Sayre, according to Abe Foxman, mid-east affairs chief of the Anti-Defamation League, organized a national prayer meeting at the Cathedral in January 1970 on behalf of the Palestinian Arabs which "all the pro-Arabs that exist" attended. Washingtonians who sought to deliver a contrary point of view were prevented from speaking.

National and Washington-area rabbinical and Jewish community organizations as well as leading non-Jewish clergymen have issued statements repudiating the sermon. A meeting of the Council of Churches of Greater Washington, a Protestant group, was called to discuss the implications of the incident.

A sampling of the statements issued on the sermon will appear in our next issue.

Arnold Forster, general counsel of the Anti-Defamation League of B'nai B'rith, commented that "an attack from Dean Sayre on Israel comes as no surprise to us. His attitude has long been known. We read with dismay the inaccurate and unfair statement charging Israel as oppressing Jerusalem which he used to build his Palm Sunday sermon.

"His charge that Jewish rule of the Holy City is a 'moral tragedy' seems as far from the spirit of this holy season as it is from the fact."

#### DEAN SAYRE'S PALM SUNDAY SERMON RECALLS TIRADES OF CZARIST RUSSIA'S PRIESTS

The Very Rev. Francis B. Sayre Jr., Dean of Washington Cathedral and grandson of President Woodrow Wilson, observed Palm Sunday with a sermon that seemed singularly inappropriate to this presumably ecumenical age.

The harsh language was more reminiscent of anti-Jewish tirades in East Europe during the pre-Easter season. Denouncing Israel as an "oppressor" of Jerusalem, the Dean did not shrink from extreme invective. Referring to present-day Jerusalem, he said: "The zenith of our hope, undone by the wanton meanness of men who will not share it with their fellows, but choose to kill rather than to be over-ruled by God."

The same theme was echoed by a number of other Christian clergymen, all of them apparently inspired by a pro-Arab campaign.

We do not recall that the reverend gentleman or any of his like-minded colleagues ever denounced or even deplored the oppression of Jerusalem between the years 1948 and 1967, when Arabs ruled the city and would not permit a Jew to visit any of his holy places. Yet, now when the city is open to people of all races and religions, there are Christian clergymen who choose the Easter-Passover season to incite hatred against the only people who ever exalted Jerusalem as their national capital.

According to the daily press, the Dean indicated that he based his cruel judgment on Israel on a comment made by an Israeli, Israel Shahak, a new leftist chemistry professor at Hebrew University. The fact that one Jew has found Israel at fault is apparently conclusive proof to the Dean that all Israel is to be condemned. That the Israeli people are of many opinions and that they are completely free, even in time of crisis, to exorcise their government evidently gains Is-

rael no points with this Christian Dean. He evidently prefers also to assume that Arab governments are rendered pure by the fact that no Arab dares to express a dissenting view.

Even if the Dean were innocently misled by the fact that an Israeli dissident has pleaded guilty for his country, there would still be no warrant for the Dean's reference to killing in Jerusalem. Israel's harshest critics have admitted that Israel has maintained the most liberal administration of the holy places in the city's modern history, and that its rule has been singularly mild in view of the tensions of war.

We are certain, nevertheless, that the Very Rev. Francis B. Sayre, Jr., did not consciously mean to emulate the traditional anti-Semitism of Czarist priests, who would make a practise of delivering blood-curdling indictments of Jews during their holy season. In singling out Jews for criticism that he withheld from Arab oppressors of Jerusalem, he may be betraying anti-Arabism more than anti-Semitism, since his only excuse for not having condemned the Arabs during their bigoted rule of Jerusalem would be that they are not criticism-worthy.

Grateful as we may be for being considered criticism-worthy by the Dean, we wonder whether Palm Sunday, which has long had fearsome connotations for the Jewish people, was an appropriate occasion for thus honoring us.

[From the Washington Post]

#### LETTERS TO THE EDITOR: REACTION TO DEAN SAYRE'S PALM SUNDAY SERMON ON JERUSALEM

On a fact-finding trip to Jerusalem a few weeks ago, both signatories of this letter failed to find any evidence of Israeli oppression in that city, of which Dean Francis B. Sayre Jr. spoke in his sermon in Washington Cathedral, as reported in The Washington Post (March 27). He named as his source of information Israel Shahak's letter in Christianity and Crisis, which we have read and found on the whole distorting and moreover, a singularly weak basis upon which to build a sermon in the Cathedral.

Shahak's technique of criticism is a familiar one. Every untoward action of the Israeli government of many months, and even years, is listed together in a way to convey the impression of an intense and ongoing oppression. The technique deceives no one at all familiar with the real conditions in the city.

Dean Sayre would have been better advised had he checked his information and his perspective with his co-churchman in Jerusalem, Anglican Archbishop George Appleton. One of us had the privilege of a long interview with him on the situation in Jerusalem, and we can assure the dean that the impression received from the archbishop was quite the contrary of that given by his remarks in Washington Cathedral.

Is there not something very wrong with Christians employing anti-Zionist Jews to witness for them against Israel? Is it not too close to the old anti-Semitic stratagem of using passages from the Hebrew prophets in order to scold Jews?

The Rev. EDWARD H. FLANNERY,  
Executive Secretary, Secretariat for  
Catholic-Jewish Relations.

The Rev. Msgr. GEORGE G. HIGGINS,  
Director, Division for Urban Life,  
United States Catholic Conference.  
Washington.

NOTE.—The writer, a guest lecturer at the University of Maryland, is professor of English at Bar-Ilan University in Israel.)

If the Rev. Francis Sayre Jr. is indeed correctly quoted in your edition of March 27, I find it hard to credit that the Dean of the Washington Cathedral should have devoted his Palm Sunday address to an intemperate and entirely partisan attack upon Israel as

"the oppressors of Jerusalem." When confronted with so clear an example of prejudice and distortion it seems pointless to offer a merely logical or statistical rejoinder. I shall therefore confine myself to one or two pertinent questions.

Who are the Arab residents who have been "unjustly deported" from that city? Has the Rev. Mr. Sayre acquainted himself with the files on the persons in question? Of what civil and religious liberties are the Arab residents of Jerusalem deprived? On what moral or legal grounds should Israel be required to permit the unrestricted immigration of additional Arabs into her territory? Is the Rev. Mr. Sayre aware that at the time of the foundation of the State of Israel in 1948 close to one million Jews were driven out of the Arab lands without the right of return? (Some 700,000 eventually found a haven in Israel). He raises his voice against the imaginary oppression of the Arabs in East Jerusalem. Did he, I wonder, raise his voice against the expulsion of the Jews from their homes in the Old City (East Jerusalem, note) in 1948 and the consequent deprivation of their rights by the Jordanian authorities for a period of 20 years? During that whole period Jews were not allowed access to their holy places including the Western Wall of the (Jewish) Temple. Did he, when the facts became known to him, similarly raise his voice against the destruction of the synagogues in the Jewish quarter of the Old City by the Arab Legion (after the fighting there was over) and the wanton desecration of Jewish tombs on the Mount of Olives? Or would these matters have been inappropriate for mention in a Palm Sunday sermon? I forbear to question the accuracy of Mr. Sayre's information regarding the primacy of Jerusalem in the faith of Islam (though I believe it is at least questionable). But surely Mr. Sayre can be in no doubt regarding the primacy of Jerusalem in the faith and history of the Jew.

I am not sure how to understand the last sentence of the Rev. Mr. Sayre's reported sermon, and indeed I imagine it must have puzzled many of your readers. He speaks of "the meanness of men who will not share it [i.e., Jerusalem?] with their fellows, but choose to kill rather than be overruled by God." Is this the theological language appropriate to a Christian living in the post-Auschwitz era? Is Israel indeed on trial at the bar of Christian truth, or is it not rather the Church of Christ which must search its conscience and question its conduct for standing by silently (as so many of its leaders did) whilst the Jewish people were being murdered and reviled? If now that people has regained its stature and dignity and has won a place for itself in one corner of the world, one might expect the leaders of the church if not to rejoice then at least to maintain a decent and humble silence before these mighty acts of the Lord of History—your history as well as ours.

HAROLD FISCH.

WASHINGTON.

Passing through on my way back to Jerusalem, my home town, I chanced upon your report of Dean Sayre's talk on Palm Sunday.

How can a high church official spout such non-factual garbage?

I don't know who this so-called professor Shahak is (since I am connected with the Hebrew University myself and have never heard of him, he may well be a figment of some Arab propaganda machine) but the facts are—and easily ascertainable—that the East Jerusalem Arabs can be Israeli citizens if they wish, with all the rights and privileges of such citizenship (although they do not have to serve in the Israeli Army) and unless there is a clear-cut security reason, Arab families have long been able to be reunited, not only in Jerusalem but in all of Israel and the administered territories.

Furthermore, all Christians and Moslems,

as well as Jews, have unrestricted access to their holy places. The oppression of the Israelis is expressed in such things as the first free elections in the West Bank, greatly improved social, health, and educational services, and a much higher standard of living.

Where was the prelate during the Jordanian occupation of East Jerusalem (carried out by force of arms, incidentally) from 1948 to 1967, when Jews were thrown out or killed, the Jewish holy places destroyed or desecrated, and no Jews allowed access to their cemeteries, *yeshivot*, or holy places (including the Western Wall)?

This churchman illustrates well the typical liberal gentile bleeding-heart attitude to the Jews—we'll commiserate with you as long as you're dependent on our goodwill for your survival, and we'll weep for you when you are slaughtered every few years by our co-religionists—but Lordy, don't you start winning and controlling your own destiny!

The hell with them, I say. We don't exist to justify their emotional hangups. We validate our own existence.

A. GRONMAN.

Jerusalem.

Dean Francis Sayre to the contrary I do not believe it is possible or appropriate for any believer faithful to a *loving* God to look for spiritual fulfillment in an attitude of hatred toward one side or the other in the Near East tragedy. Dean Sayre's Palm Sunday remarks about Jerusalem are incredible to anyone sensitive to the whole situation. In fact, Israel Shahak's observations, which the dean quotes, reveal not a "wanton meanness of men who . . . choose to kill" but instead they indicate in Shahak himself a Jewish conscience astir in Jerusalem about Jerusalem. Please, in this season celebrated simultaneously by Christians and Jews, let us shore up the respect for one another, not the suspicions.

NANCY McMURRAY,  
Convert to Judaism.

Washington.

It was with dismay, but no surprise, that we noted the inaccurate and unfair statements upon which the Very Rev. Francis B. Sayre built his Palm Sunday sermon at the National Cathedral (Washington Post, March 27). His false assertions that Israelis are "oppressors" in Jerusalem and that Jewish rule of the city is a "moral tragedy" seem as far from the conciliatory spirit of this holy season as they are from the facts.

Dean Sayre's strange suggestion that Jewish rule of Jerusalem (which has had a predominantly Jewish population for well over a century) is somehow not in accord with God's "will for us," serves to explain why no ringing sermons of protest were heard from him during Jordan's 19-year illegal occupation of the Old City. From 1948 to 1967 all Jews, Christians and Moslems from Israel were forbidden access to their holy places and all but one of the old City's 35 synagogues were wantonly destroyed.

Nor during this entire period did we hear Rev. Sayre's voice raised for the Jews of the Arab countries, who are being persecuted and humiliated even to the present time. In contrast, Israel has provided religious freedom, access and a boost into the 20th century for its Arab citizens.

Another distinguished minister, the Rev. Dr. G. Douglas Young, president of Jerusalem's American Institute of Holy Land Studies, is much closer to the facts. He lives in Jerusalem, has for many years, and he reports that Palestinian Arabs living under Israeli rule "are not keen to go back under Egypt or Jordan" and are not afraid to say so.

The most disturbing aspect of Dean Sayre's sermon, however, involves his charge that Israel is a "mirror" of religious hypocrisy and that the people of the Jewish State

"choose to kill rather than be overruled by God." This is a venomous sort of fantasy that hardly lends grace to a pulpit on the day marking the entry of the Prince of Peace into that holy city of three faiths.

Rabbi JUDAH A. CAHN,

Chairman, Middle Eastern Affairs Committee, Anti-Defamation League of B'nai B'rith.

NEW YORK.

This period of special religious significance for Christians and Jews is scarcely the time for churchmen to engage in public dispute. Neither is it a time to keep silent when one's brothers and sisters of another faith have suffered a hurt. Dean Francis Sayre Jr. apparently was preaching good theology last Sunday in the Washington Cathedral, but questionable history. I'm no Jerusalem expert who can pit his knowledge against the gracious and learned dean, but I recall official statements by reputable Christians that give quite a different picture of religious and civil liberties in Jerusalem today. For example, two groups of Christian churchmen issued statements last June on what they saw and studied in Israel, commending that nation for its care for human rights, its fairness in housing, its practices of religious liberty, and its respect for holy places. Only this week I checked this kind of assessment with an American Catholic specialist in this field, just returned from Jerusalem, and he substantiated their basic findings.

I'm no apologist for Israel and I've found things in her short history to criticize. But to term Israel the oppressor today in Jerusalem in any serious way is to ignore the history of Jerusalem with respect to the same issues from 1948 to 1967.

The Rev. GRAYDON E. MCCLELLAN,  
Presbytery Executive, National Capital Union Presbytery.  
Washington.

When I was a child I was hypnotized by tales of childhood for a Jewish lad in Russia before the turn of the century. I remember still vivid descriptions of frightened Jews locked in their homes to avoid pogroms as red-eyed Russian peasants left their church screaming for Jewish blood on Palm and Easter Sundays. How wonderful it was, I thought, to be in America where even the church was enlightened.

So I thought until I read of Dean Sayre's vicious attack on Israel from his pulpit last Sunday. His was one of many attacks from various pulpits in this city. He accuses Israel of being aggressive, engaging in genocide and brutalizing the Arabs of that city—all of which is directly contrary to every report from every church group to visit unified Jerusalem. How crudely he attempts to defend this anti-Jewish diatribe with his meager evidence. One can only wonder about the depth of the ecumenical spirit of which we hear so much, when viewing this appropriate heir to the worst there is in the Christian tradition.

SOLOMON L. MARGOLIS.

Washington.

SYNOPSIS OF SABBATH EVENING SERMON DELIVERED BY RABBI BERNARD H. MEHLMAN

This past weekend, the Jewish and Christian communities of Washington were preparing to celebrate their respective holidays. For the Jewish community, this year's Festival of Passover had a special significance as the Festival of Freedom.

Not only are we celebrating the liberation of our ancestors from Egyptian bondage thousands of years ago, but we were also mindful of the liberation of Jews and the historic center of their faith: Jerusalem. No longer are Jews denied access to the holy ground of Jerusalem. No longer were Jewish graves in East Jerusalem desecrated, their tombstones used to pave the streets.

No longer were Jews denied even a glimpse of their holiest site: The Western Wall.

Joining with us in this celebration of freedom and human justice were the voices of such church leaders as Mrs. Cynthia Wedel, President of the National Council of Churches; Monsignor John M. Oesterreicher, an acknowledged leader in Catholic-Jewish studies at Seton Hall; the World Council of Churches; the Armenian Patriarch of Jerusalem; and such lay opinion leaders as the Editors of Time magazine and the New York Times—all of whom do attest, affirm, and acclaim Israel's administration of the Holy City and its fair treatment of the populace of East Jerusalem, Jew and non-Jew alike.

But one voice was missing. Speaking alone, discordant, and with the chill of winter, Dean Francis B. Sayre, Jr., of the Washington National Cathedral rose to the pulpit on Palm Sunday morning to deliver a homily. His lonely teaching harkened back to the days of bloodshed, to the mentality of bondage and oppression, and was a stark note of religious division. He delivered his homily on Palm Sunday, a day revered by Christians—but in the past deeply feared by Jews, for it was frequently the signal day for the beginning of pogroms. Every good preacher knows the significance of timing; I must assume that Dean Sayre was aware of the timing of his homily of Palm Sunday.

Grave questions are raised as to the rationale, if not also the consequences of his statement. Clearly he chose to ignore the weight of reputable Christian opinion concerning Israel and the Jewish administration of Jerusalem and instead seized an isolated observation by one individual which appeared in Christianity and Crisis. That he chose this particular article to generalize—again, on this particular day, Palm Sunday—leads us to ask a series of painful questions: Could this be a re-surfacing of a vestigial type of anti-Semitism? Or could this be an anti-Jewish posture concerning the questions of Israel and the administration of a united Jerusalem? Or—the worst of all—did he mean to do both?

Dean Sayre must answer such questions not merely to satisfy Jewish opinion, which he might choose to ignore; but he must answer his Christian brethren and colleagues in the clergy, for whom such a homily would be totally out of the question and, indeed, anathema to their feeling of brotherhood, the one-ness of mankind, and their diligent efforts to make ecumenism a living reality.

For me personally and for us as a community, linked in one sanctuary with an Episcopal Communion, St. Augustine's Church, this sermon strikes exceedingly close to home. In an age of growing improved Christian-Jewish relations, to which our joint effort here in Washington is a rich witness, Dean Sayre's lonely stance of division cannot be lightly dismissed by men of good will of any faith.

Despite the shock we have all felt at his Palm Sunday homily, we are turning once again to the richnesses of this holiday season and now feel a lingering sense of deep regret. Those of us who still strive for justice and brotherhood in an imperfect world—and who would welcome his return and assistance—now await his answers to our painful questions.

BRIG. GEN. JAMES F. LAWRENCE,  
U.S. MARINE CORPS

HON. F. EDWARD HÉBERT

OF LOUISIANA

IN THE HOUSE OF REPRESENTATIVES

Wednesday, March 29, 1972

Mr. HÉBERT. Mr. Speaker, upon the occasion of his recent retirement from



the Marine Corps, I include in the RECORD the biographical sketch of a truly dedicated and distinguished military officer, Brig. Gen. James F. Lawrence, USMC. Jim Lawrence has served his country with distinction for 30 years. And as most of you know, since 1967 he has served this body well as the Deputy Assistant to the Secretary of Defense for Legislative Affairs.

It is with deep regret that I see the general go into retirement, but it is a retirement richly deserved for a man who performed in the best traditions of the Marine Corps. I know my colleagues will join me in wishing the general the very best in the years ahead.

Also, Mr. Speaker, I insert in the RECORD a news release announcing the second award of the Distinguished Service Medal presented to General Lawrence by Defense Secretary Laird:

#### DISTINGUISHED SERVICE MEDAL

Secretary of Defense Melvin R. Laird will present the Distinguished Service Medal, Gold Star in lieu of second award, to Brigadier General James F. Lawrence, USMC, during a ceremony at 3 p.m. today in the Secretary's office, 3E880.

General Lawrence, who has served as Deputy Assistant to the Secretary of Defense for Legislative Affairs since 1967, will retire from active duty Saturday, April 1, resuming inactive status on the retired list of officers of the United States Marine Corps.

General Lawrence was born March 17, 1918, at Rutledge, Tennessee, and was graduated from high school at Asheville, North Carolina. He holds degrees from the University of North Carolina and George Washington University. He has served in the Marine Corps for 30 years.

In 1963, General Lawrence reported for duty as military assistant to the Assistant Secretary of Defense (Manpower); became Deputy Director in the Office of Legislative Liaison to the Secretary of Defense in 1965, and has held his present assignment since May 1, 1967.

Among General Lawrence's other awards is the Navy Cross received for gallantry in action in Korea in 1950.

He is married to Diana Harrison Foote. They have three children—Diana, James and Richard. They reside at 8720 Waterford Road, Alexandria, Virginia.

#### BRIG. GEN. JAMES F. LAWRENCE

James Fugate Lawrence was born March 17, 1918, in Rutledge, Tennessee, and graduated from Sand Hill High School, Candler, North Carolina, in 1936. He was graduated from the University of North Carolina, Chapel Hill, North Carolina, in 1941, receiving a Bachelor of Science Degree in Commerce. In 1953, he received an LLB degree from The George Washington University, Washington, D.C.

He attended the Platoon Leaders Course during the summers of 1938 and 1940 as a private first class in the Marine Corps Reserve, and was commissioned a Marine Reserve second lieutenant on July 1, 1941. Lieutenant Lawrence completed the Basic School, Marine Barracks, Naval Shipyard, Philadelphia, Pennsylvania, in April 1942.

During World War II, he served first as a platoon leader and then as a company executive officer with the 1st Battalion, 1st Marines, 1st Marine Division on Guadalcanal and New Britain. For his service during this period, he was awarded the Bronze Star Medal with Combat "V," the Purple Heart, and the Presidential Unit Citation. He was promoted to first lieutenant in December 1942 and to captain in September 1943.

Upon his return to the United States in August 1944, Captain Lawrence was assigned

duty as Commanding Officer, Marine Detachment, Marine Barracks, Naval Base, Norfolk, Virginia, until September 1945. He completed the Japanese Language School, Yale University, New Haven, Connecticut, in December 1946. He accepted appointment in the regular Marine Corps in August 1946.

From December 1946 until May 1947, he served as Assistant Division Legal Officer with the 1st Marine Division. Ordered to the Marine Barracks, Yokosuka, Japan, he became Commanding Officer and Fleet Activities Provost Marshal, U.S. Fleet Activities until June 1949. While in Japan, he was promoted to major in August 1947. He completed the Amphibious Warfare School, Junior Course, Marine Corps Schools, Quantico, Virginia, in June 1950.

During the Korean conflict, Major Lawrence again served with the 1st Marine Division, this time as S-3 Officer; Battalion Executive Officer; and finally as Commanding Officer of the 2d Battalion, 7th Marines. He received the Navy Cross, a Gold Star in lieu of a second Bronze Star Medal with Combat "V," and the Presidential Unit Citation with two bronze stars for his Korean service.

Upon his return to the United States, Major Lawrence attended Law School at The George Washington University, completing the course in July 1953. He was promoted to lieutenant colonel in October 1952.

Lieutenant Colonel Lawrence reported to Headquarters Marine Corps where he served as Assistant Legislative Assistant to the Commandant of the Marine Corps from July 1953 until July 1956. He completed the Amphibious Warfare School, Senior Course, Marine Corps Schools, Quantico, Virginia, in June 1957. Colonel Lawrence was Staff Assistant for Doctrine and Development until November 1957, then served as a Member on the Marine Corps Board at Quantico until June 1959.

Assigned to Headquarters, Fleet Marine Force, Pacific, he saw duty in the G-1 Section until 1960; following this he served as the Force Legal Officer until July 1962. While serving as Force Legal Officer, he was promoted to colonel in April 1962. Assigned next to the 3d Marine Division on Okinawa, he served as Division Legal Officer until August 1963.

Returning to the United States later that month, he reported for duty as Military Assistant to the Assistant Secretary of Defense (Manpower), until October 1965, then became Deputy Director in the Office of the Legislative Liaison Office to the Secretary of Defense. He received a Letter of Commendation from the Honorable Norman S. Paul, Assistant Secretary of Defense (Manpower), and was awarded the Joint Service Commendation Medal for service as Military Assistant from September 1963 until October 1965. Advanced to the rank of brigadier general on May 1, 1967, he began his current assignment.

A complete list of his medals and decorations includes: the Navy Cross, the Bronze Star Medal with Combat "V" and Gold Star in lieu of a second Bronze Star Medal with Combat "V," the Joint Service Commendation Medal, the Purple Heart, the Presidential Unit Citation with two bronze stars, the Asiatic-Pacific Campaign Medal with four bronze stars, the American Campaign Medal, the World War II Victory Medal, the China Service Medal, the Navy Occupation Service Medal with Asia clasp, the National Defense Service Medal with one bronze star, the Korean Service Medal with one silver star in lieu of five bronze stars, the United Nations Service Medal, the Korean Presidential Unit Citation, Distinguished Service Medal, and a Gold Star in lieu of the second award in March 1972.

Brigadier General Lawrence is married to the former Diana Foote of Charlotte, North Carolina. They have three children: Diana H. James F., and Richard W. His parents are Mr. and Mrs. James F. Lawrence of Candler, North Carolina.

#### DRAFT RESISTERS

### HON. STEWART B. McKINNEY

OF CONNECTICUT

IN THE HOUSE OF REPRESENTATIVES

Wednesday, March 29, 1972

Mr. McKINNEY. Mr. Speaker, with the success of President Nixon's Vietnamization policy, the thoughts of many Americans have turned to the thousands of young men who resisted induction into the Army. Several hundred of these men had the courage of their convictions and went to jail rather than serve their country in what they believed to be an unjust war. The vast majority, however, decided to flee the United States and are now living in other countries.

What do we do with these young men? On the one hand, there are those who believe they should never be allowed to return to the United States or, if they do return, they should spend untold years wasting their lives in jail. On the other hand, there are many people, including some of the resisters themselves, who believe they should be invited back to the United States, saying it is we, not they, who have done wrong.

I cannot align myself with either of these groups. No matter what their reasons, the 70,000 or so young men who refused to be drafted violated the law and, if we are to remain a nation of laws, they must accept the consequences of their acts. At the same time, I do not believe they should be subject to the ordinary criminal justice process with its consequent prison sentence. Requiring all of these men to go to trial would put an additional strain on prosecutors and courts which are already overburdened with work. More importantly, however, requiring these young men to go to prison would be counterproductive toward our goal of having them become responsible citizens.

Therefore, I have given my support to Senator TAFT's proposal which would permit draft resisters to return to the United States on the condition that they serve 3 years either in the Armed Forces or some form of alternate service. I believe this is a realistic approach to an extremely complex problem. Unfortunately, my views on this issue have been misinterpreted by many who believe I favor general amnesty, welcoming the draft resisters back and attaching no consequences to their acts. I have drafted a reply to the numerous constituents who have written to me on my position, and I want to take this opportunity to insert a copy of that letter in the RECORD:

#### LETTER TO CONSTITUENTS

DEAR SIR: I am disturbed that through what I hope is only a simple misunderstanding, my position on the approach the United States should take toward those who refused to serve their country during the Vietnamese conflict has been misinterpreted. I have never said, nor is it my intention, that they should be allowed to "saunter back, free and unhampered."

May I state the facts as they are. First, I am a veteran and a member of the American Legion who has for years worked for the cause of the veteran. As such, I would never attempt to take anything away from their honor or service. In fact, I am the sponsor of

quite a few bills intended to give them the help and recognition they truly deserve.

Second, I do not intend that there should be any action or any vote on this issue until the war has ended and all of our prisoners of war and American soldiers have returned to the United States.

Third, I am in no way attempting to exonerate these young men who have violated the law of the land. We are a nation of laws, and those who disagree with those laws must change them, not put themselves above them. Even the highest moral beliefs cannot give a man the right to put himself ahead of his obligation to obey the law of the land, without being willing to accept the consequences for his act.

Finally, I would like to point out that many young men who fled this country in the early days of the war could possibly have obtained deferments as conscientious objectors later on. Prior to 1967, this deferment was based on the belief in a Supreme Being. The 1967 Selective Service Act, however, dropped this section from the legislation, and from that point on, a deeply held moral conviction has been enough to qualify for a deferment.

Senator Taft has proposed that draft resisters be permitted to return to the United States on the condition that they serve three years either in the Armed Forces or in some form of alternate service. By giving my support to this proposal, I am not denying the principles which have guided our nation for the last two hundred years. Rather, I am trying to offer a realistic alternative to prison which will avoid national chaos.

Anyone who has followed the recent news stories on American prisons knows that they have been dramatic failures. They were designed to punish a man for his wrongdoing, but most importantly, to rehabilitate him so he would not commit a crime again. Yet, after more than 100 years of following this policy, 80% of those who have been to prison return.

Prisons have been aptly described as schools for crime, and the director of the U.S. Bureau of Prisons, Norman Carlson, has observed that "anyone not a criminal will be when he gets out." I see no reason for sending a draft resistor to prison where the only

trade he will learn may be burglary and his alienation toward his country will only increase. Instead, I believe these men should be permitted to pay their debt to society in a more constructive manner, namely some form of public service. Three years of public service will benefit the individual and society much more than three years in prison.

Finally, I would like to emphasize once again that amnesty is not a new idea. It has been granted in some form after every war since the days of George Washington. Yet, in spite of this, the nation has survived a civil war and two world wars. Therefore, I do not fear a chaotic social structure if we follow what we have always done in the past—offer every individual, no matter what his crime, a second chance to share both the responsibilities and privileges of living in the United States. The only difference with this war is that it has been more unpopular than others and has lasted longer than others. Therefore, talk of amnesty has perhaps been more prevalent than in other wars.

I suppose it would have been easier not to raise this issue until the war has ended. As I have repeatedly said, no action should be taken before that time anyway. In addition, the political controversy surrounding my statement could have been avoided. But I have always made it a policy to answer every question as directly as I can, and it would have been unfair to the student who asked me my views on this issue and to all of my constituents if, for the sake of political expediency, I gave only half an answer.

Sincerely,

STEWART B. MCKINNEY,  
Member of Congress.

#### WPLN-FM RADIO, NASHVILLE

### HON. WILLIAM R. ANDERSON

OF TENNESSEE

IN THE HOUSE OF REPRESENTATIVES

Wednesday, March 29, 1972

Mr. ANDERSON of Tennessee. Mr. Speaker, as of February 21, WPLN-FM

radio in Nashville was expanded to 100,000 watts stereo. This expansion of an outstanding station, which has listeners from Kentucky, middle Tennessee, and Alabama, was made possible through the grant program funded by the Public Broadcasting Act. The residents of the Sixth District of Tennessee and the Nashville area are much richer for this experience. WPLN programming is not strictly educational, or musical, but blends a fine array of programs to produce an excellent format. Listeners can appreciate fine classical music, have the opportunity to hear congressional hearings and major speeches live, can enjoy science lectures from the British Broadcasting Corporation, delight in a European music festival and be kept up to date by in-depth news coverage and recent happenings in Nashville.

The modern history of public radio began in 1967 with the enactment of the Public Broadcasting Act. The Corporation for Public Broadcasting was also created and set its goal at developing noncommercial radio and television. The CPB functions in a nonprofit, independent manner and is the main financial supporter for the National Public Radio network. WPLN, as one of the 500 public radio stations in the Nation, actually belongs to the community. The operation is financed through municipal appropriations, individual contributions, plus the Public Broadcasting grants.

In a day when the media is being attacked for peddling pabulum to the public, WPLN and its sister stations stand out as an attractive alternative leading the way in entertaining, informative and educational programming.

I hope my colleagues are aware of the fruits of the Public Broadcasting Act such as WPLN, and will vote in favor of continued funding for the corporation.

## SENATE—Thursday, April 6, 1972

The Senate met at 11 a.m., and was called to order by Hon. JAMES B. ALLEN, a Senator from the State of Alabama.

#### PRAYER

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

Eternal Father, we lift our hearts to Thee in thanksgiving for many blessings, but especially for this good land which Thou hast given us for our heritage. Help us to prize highly and to conserve carefully the rich endowment of natural and human resources and to use both for the common welfare.

Look upon all who serve in the Government of this Nation, giving them wisdom and strength for public action, and spiritual renewal and inspiration in home and family life. Bind leaders and people together for united action in concerting those measures which shall best further the kingdom of righteousness and peace befitting a nation under God.

In Thy holy name we pray. Amen.

#### DESIGNATION OF THE ACTING PRESIDENT PRO TEMPORE

The PRESIDING OFFICER. The clerk will please read a communication to the Senate from the President pro tempore (Mr. ELLENDER).

The second assistant legislative clerk read the following letter:

U.S. SENATE,  
PRESIDENT PRO TEMPORE,  
Washington, D.C., April 6, 1972.

To the Senate:

Being temporarily absent from the Senate on official duties, I appoint Hon. JAMES B. ALLEN, a Senator from the State of Alabama, to perform the duties of the Chair during my absence.

ALLEN J. ELLENDER,  
President pro tempore.

Mr. ALLEN thereupon took the chair as Acting President pro tempore.

#### THE JOURNAL

Mr. MANSFIELD. Mr. President, I ask unanimous consent that the reading of the Journal of the proceedings of Wednesday, April 5, 1972, be dispensed with.

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

#### COMMITTEE MEETINGS DURING SENATE SESSION

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

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

#### KALISPELL, MONT., ROTARIANS CLEAN UP THEIR VALLEY

Mr. MANSFIELD. Mr. President, I am in receipt of an issue of the Rotarian, an international magazine, which published an article entitled "Kalispell Comes Clean."

Kalispell, Mont., is one of the most beautiful cities in the Nation. It nestles in one of the most beautiful areas of the Nation, in the Flatland Valley in the northwestern part of my State.

In recent months, the Kalispell Rotary Club, a subsidiary of the Planned Environment Committee, created in 1969 and