STATE TECHNICAL SERVICES ACT—EXTENSION

HEARING

BEFORE THE

SUBCOMMITTEE ON COMMERCE AND FINANCE

OF THE

COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE

HOUSE OF REPRESENTATIVES

NINETIETH CONGRESS

SECOND SESSION

ON

H.R. 16824

A BILL TO EXTEND FOR AN ADDITIONAL YEAR THE AUTHORIZATION OF APPROPRIATIONS UNDER THE STATE TECHNICAL SERVICES ACT OF 1965

S. 3245

AN ACT TO EXTEND FOR AN ADDITIONAL THREE YEARS THE AUTHORIZATION OF APPROPRIATIONS UNDER THE STATE TECHNICAL SERVICES ACT OF 1965

JUNE 19, 1968

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STATE TECHNICAL SERVICES ACT—EXTENSION

WEDNESDAY, JUNE 19, 1968

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON COMMERCE AND FINANCE,
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
Washington, D.C.

The subcommittee met at 10 a.m., pursuant to notice, in room 2123, Rayburn House Office Building, Hon. John E. Moss (chairman of the subcommittee) presiding.

Mr. Moss. The subcommittee will be in order.

This morning we commence public hearings on H.R. 16824, which is a bill extending the authorization of appropriations under the State Technical Services Act of 1965.

As introduced, the bill would renew the program for 1 year with a money limitation of $7 million.

I note that the Senate Commerce Committee recently reported a bill and the Senate subsequently passed it on a voice vote authorizing a 3-year renewal with an authorization of $7 million for 1969 and $10 million for each of the fiscal years 1970 and 1971.

We will be interested in testimony and estimates as to the length and cost of a renewal of this legislation.

We will also be interested in receiving testimony concerning the achievements on the 1965 legislation.

At this point in the record we will insert the bills under consideration, and such agency reports thereon that are available.

(H.R. 16824 and S. 3245, and departmental reports thereon, follow:)

[H.R. 16824, 90th Cong., 2d sess.]

A BILL To extend for an additional year the authorization of appropriations under the State Technical Services Act of 1965

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 10 of the State Technical Services Act of 1965 (15 U.S.C. 1360; 79 Stat. 682) is amended by striking the period at the end of subsection (a) and inserting the following: "; $7,000,000 for the fiscal year ending June 30, 1969".

[S. 3245, 90th Cong., 2d sess.]

AN ACT To extend for an additional three years the authorization of appropriations under the State Technical Services Act of 1965

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 10 of the State Technical Services Act of 1965 (15 U.S.C. 1360; 79 Stat. 682) is amended by striking the period at the end of subsection (a) and inserting the following: "; $7,000,000 for the fiscal year ending June 30, 1969; $10,000,000 for the fiscal year ending June 30, 1970; $10,000,000 for the fiscal year ending June 30, 1971."

DEPARTMENT OF COMMERCE,
Washington, D.C., May 23, 1968.

Hon. HARLEY O. STAGGERS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: This is in further reply to your request for the views of this Department concerning H.R. 16824, a bill "To extend for an additional year the authorization of appropriations under the State Technical Services Act of 1965."

H.R. 16824 provides for the authorization of an appropriation of $7,000,000 for the fiscal year ending June 30, 1969. All other provisions of the Act are unchanged by this bill.

While the Department strongly supports the objectives of H.R. 16824, we believe that the interests of the State Technical Services Program will be best served if the authority for appropriations is not limited to one additional year. We consider it necessary that this authority be extended for two years, fiscal year 1969 and fiscal year 1970, as requested in the draft bill submitted to the Congress on March 5, 1968. This additional year of appropriations authority would serve to convey to the States participating in the State Technical Services Program confidence that the Federal Government shares their enthusiasm in the program and recognizes with them its potential. It would also provide the States with reasonable assurance that funding would be continued.

Although only two years have passed since the first approved State Technical Services Programs were put into operation, there is growing evidence that valuable services and benefits have been provided to business, commerce, and industry. More than 1,500 technical service projects involving technical information and referral services, field services, and educational programs are providing assistance to industries such as construction, ceramics, fishing, food processing, forestry, metalworking, mining, petroleum, printing and graphic arts, stone, textiles, and woodworking.

In the States of Maine and Oregon, companies in the fishing industries are being made aware of new technologies relating to the location of fish and the preservation, processing, and packaging of fish products, making them better able to compete with foreign nations. In Pennsylvania, a textile machine manufacturer was shown how to correct a hardening process to produce a reliable machine part. A maker of tire retreading equipment in Georgia was assisted in converting to fiberglass insulation for improved curing at reduced costs. In West Virginia, small manufacturers are being shown how to spray-paint their products using an electrostatic paint process which results in better quality products at reduced unit cost. Illinois construction firms are being introduced to the benefits which can come from the application of computers to their overall operations. These programs have been developed at the local level to meet recognized needs of principal industries in the States and have been made possible through matching grant support under the State Technical Services Act.

We believe that the above examples are indicative of the tremendous benefits which can occur from the more effective utilization of technology through State Technical Services Programs. The Department of Commerce earnestly requests the continued support of the Congress in carrying out this work.

We have been advised by the Bureau of the Budget that there would be no objection to the submission of our report to the Congress and further that enactment of H.R. 16824, amended as recommended above, would be consistent with the program of the President.

Sincerely,

PEDRO R. VASQUEZ,
for General Counsel.

Mr. Moss. Our first witness this morning is Dr. John F. Kincaid, Assistant Secretary for Science and Technology of the Department of Commerce.

Dr. Kincaid.

STATEMENTS OF DR. JOHN F. KINCAID, ASSISTANT SECRETARY FOR SCIENCE AND TECHNOLOGY, DEPARTMENT OF COMMERCE, AND PHILIP K. REILY, DIRECTOR, OFFICE OF STATE TECHNICAL SERVICES; ACCOMPANIED BY ROBERT B. ELLERT, ASSISTANT GENERAL COUNSEL

Mr. KINCAID. Mr. Chairman, I am accompanied this morning by Mr. Philip Reily, Director of the Office of State Technical Services on my left, and Robert Ellert, assistant general counsel concerned with the science and technology program, on my right.

We also have some of the staff members sitting in the audience.

Mr. Chairman, and members, as the House of Representatives Committee on Interstate and Foreign Commerce opens hearings today on H.R. 16824, a bill to extend for 1 year the authorization of appropriations for the State Technical Services Act, I would like to commend this new program to your most favorable consideration.

It has really been an effective program although a small program to date due to budget limitations.

Mr. Reily will later be prepared to give you as many examples as you would like to hear of some of the effective contributions of the staff working on this in the States to our commerce and industry.

Also, at this time, I would like to request that consideration be given to amending H.R. 16824 to provide authorization for appropriation for 2 years, fiscal years 1969 and 1970, instead of 1 year.

This additional authority is believed to be necessary to provide a measure of assurance to the States that the program will have continuity.

The State Technical Services Act, Public Law 89–182, was signed by President Johnson on September 14, 1965. It provides for annual Federal grants to match State funds in support of cooperative programs designed to apply the findings of science to business, commerce, and industry to encourage economic growth to the States and the entire Nation.

The keystone of the legislation is local leadership, local initiative, local participation, and local resources.

PROGRESS TO DATE

The Office of State Technical Services was established in the Department of Commerce on November 19, 1965, and State participation was formally invited at that time.

To date, every State, together with Puerto Rico, Guam, the Virgin Islands, and the District of Columbia, has designated an agency to administer and coordinate programs under the State Technical Services Act.

In addition, 5-year plans for economic development of the States and annual technical-service programs to begin to carry out those plans have been prepared by nearly every State.

So far in the current fiscal year, we have requests for 46 annual program grants.

Next year, we expect requests for annual program grants from all 54 of the States and other eligible jurisdictions. One encouraging

trend has been cooperation on a regional basis by many States in carrying out certain portions of their technical-service programs.

A regional program was recently approved for the New England States, and the Rocky Mountain States are now working on a regional plan for submission next year.

The act also permits matching grants to qualified institutions for programs that are especially meritorious or which have specific regional or national significance.

We have made 26 matching grants for such programs in our work to date.

Finally, the act calls for assistance to the States by provision of referral services, and we have established a capable activity for this purpose.

TECHNOLOGY FOR ECONOMIC GROWTH

Tremendous postwar expenditures for research and development—estimated at $160 billion in the last decade, alone—have created a vast reservoir of technology, much of which goes largely unused in the Nation's economy and which would be of immediate, practical value to American enterprise if it were made available when and where it is needed.

Conventional document services and other impersonal techniques have tended to swamp the user in his search for a specific answer.

Incidentally, the rate at which technological information has been accumulated has increased at a rapid pace. It has been estimated we have doubled our technological information in recorded literature in the last 15 or 16 years.

This contrasts with a doubling period of perhaps 2,000 years, since the time of Christ. So, the problem of keeping track of this, of putting it in shape to use and in fact using it, is one of the great problems of our times. This is the problem to which the Office of Technical Services addresses itself.

By contrast, the State Technical Services program is designed to utilize our technical colleges and universities, State development agencies, and others to interpret technology in terms of specific needs and to place specific results in the hands of the businessman by offering him field counseling, referral services, information services, conferences, and seminars which are directly applicable to his work.

It takes this sort of face-to-face contact to bridge the gap between research and innovation.

And this is being done in State after State. The list we keep of examples of practical transfers of technology to business continues to grow impressively.

Mr. Reily has this list which he is prepared to introduce, if necessary, I believe.

THE ROLE OF THE UNIVERSITY

If I were to single out for comment one aspect of the State Technical Services program, it would be the interest and effectiveness of our university community in taking the program to the working businessman.

When the President signed the State Technical Services Act, he said, "The vehicles for success will be 250 colleges and technical schools

throughout the land." Less than 3 years later, nearly 200 universities are actively involved and others are planning early participation.

I welcome the universities to this vital new teamwork with State and Federal Government and believe that their mobilization for this task has been the most important achievement of the State Technical Services program in its brief history.

The State Technical Services Act was approved by the 89th Congress with the expectation that it would raise the level of science and technology in American business. This expectation is being fulfilled. But this is just a beginning.

Much scientific knowledge remains untapped, and many businesses have unfilled—indeed, often unrecognized—needs for it. Our efforts must be sustained and enlarged.

The Department of Commerce earnestly requests the continued support of the Congress in carrying on this work.

Thank you, Mr. Chairman and members, for this opportunity to endorse the State Technical Services Act. I would like now to introducee Mr. Philip K. Reily, Director of the Office of State Technical Services, who will tell you more about our program.

Mr. Moss. I would like to ask the indulgence of the committee to permit Mr. Reily to complete his statement and then at that time we will proceed to questions.

Mr. WATKINS. I have no objection.

Mr. Moss. Mr. Reily.

STATEMENT OF PHILIP K. REILY

Mr. REILY. Mr. Chairman and members of the committee, it is a great privilege for me to appear before you today to support H.R. 16824 and to describe to you some of our early work and progress under the State Technical Services Act of 1965.

I heard your request for specific examples of our work and I intend to get into that in the course of my statement and perhaps to supply to you a list that we keep of such examples.

(The document referred to follows:)

EXAMPLES OF TECHNICAL SERVICE ACTIVITIES, COMPILED BY THE DEPARTMENT OF COMMERCE

In Pennsylvania, a knitting-machine manufacturer was getting reports from all over the world of failure of a critical surface-hardened cam. Machines were down and costs were up, and nobody knew what was wrong. A State Technical Services man from Penn State showed them that the chromium-containing steel they had selected formed a thin surface film which resisted the nitriding process used for surface hardening. Prior scouring produced a reliable cam.

Brooklyn Polytechnic Institute—prior to State Technical Services support—had to charge so much for short courses that they were practically limited to large companies in the Defense and NASA advanced-technology complex on Long Island. Recent short courses under our partial sponsorship now attract small companies too. Selected students were permitted to attend one short course on the metallurgical aspects of electric-power transmission and gain by association with practicing engineers. The course had been developed in close consultation with International Nickel Company, American Electric Power Company, and others, to insure its aptness.

A manufacturer of parts for the automotive, tractor, and power-equipment industries met with a Michigan State Technical Services field engineer and described a problem in making prompt response to requests for quotation. A consulting arrangement was worked out with a University of Michigan faculty

member under which graduate engineering students will assist in the preparation of quotes.

A State Technical Services field man from Georgia Tech assisted a maker of tire-retreading equipment in converting to fiberglass insulation for improved curing at reduced costs.

A North Carolina raiser of fryers and broilers was losing his feather-pillow business to synthetic fibers because of an odor problem. A State Technical Services field man from North Carolina State introduced a deodorizing process which permitted him to meet Army specifications and win a $300,000 pillow contract as low bidder.

The Referral Network Office of the State Technical Services program at Ohio State was actually instrumental in arranging a merger of three companies on which an engineer had called independently. One of the companies was an able manufacturer with an effective research arm but lacked both engineering-development talent and working capital. A second had good development-engineering capabilities but also lacked working capital. The third company had an excellent working-capital position and a strong marketing group but was searching for new product lines. The merger took place within three months of the State Technical Services engineer's suggestion, and the combined companies now occupy a single building and employment has doubled.

In New York, a partner in an architectural-engineering firm had access to a shared-time computer but was unable to use it until he completed a three-day course sponsored by the State Technical Services program at Rensselaer Polytechnic Institute. After the course—which included actual time at a computer console for every registrant—he has used the firm's computer extensively. One frequently-performed calculation which had been taking him up to four hours to complete can now be done in nine minutes.

A Pennsylvania youngster home on leave from a Peace Corps assignment in Africa wanted to take back blueprints of a good windmill—one that would pump water efficiently and not blow over in a high wind. The Penn Tap State Technical Services activity had to search but finally found a set for him.

In New York, a geologist at St. Lawrence University, working under the State Technical Services Program, showed a readymix concrete company how to quarry and cut a local stone during its four-month winter shut-down. They cut 2,500 tons of stone the first year.

The State Technical Services Referral Network Office at Cleveland State University worked out an agreement with Westinghouse under which Ohio companies can have limited experiments performed on a major LASER facility.

In Oklahoma, a State Technical Services man was able to bring together the owner of a large inventory of old pin-ball machines and a manufacturer of flight-training devices who could use the switches, etc., to the profit of both.

A State Technical Services field engineer and a member of the Physics Department faculty at Eastern Michigan University showed a small electromechanical-products manufacturer a way to measure nondestructively the thickness of silver electroplating.

A small Utah concrete-aggregate firm has a line of marble-finished window sills, counter tops, etc., which were subject to bowing and warping in the longer items with no successful remedy. A civil-engineering professor/consultant—recommended by the State Technical Services program there—traced the problem to the actual aggregate used and suggested an effective solution.

A Michigan automotive parts manufacturer described a problem to a State Technical Services field engineer from Wayne State University: a fifty percent rejection rate on a windshield-wiper control system was traced to a breakdown of the lubrication/sealing material. The engineer arranged for a plant visit by a faculty member of the University of Michigan who suggested an improved lubrication method and a design change which substantially reduced the rejection rate.

In Washington, a State Technical Services demonstration—conducted jointly with the College of Fisheries at the University of Washington and the State Department of Agriculture—of the use of irradiation in processing of fish and agricultural products caused one of the largest wheat ranchers in the State to experiment with irradiated seeds. Early results were so effective that he is now planning an experiment involving 900 acres.

A Pennsylvania company used magnetic shoes on a conveyor belt to pick up parts from an annealing oven. A new part—annealed at a higher temperature—frequently fell off the magnets, and company personnel ascribed the problem to loss of magnetic permeability at the higher temperature and planned to institute

an expensive quick-cooling step. A State Technical Services man pointed out that permeability was unaffected by additional heat in that temperature range and that the new process would not solve the problem. (Probably the new pieces were heavier.)

An Ohio company needed a short method of determining bacteria counts in a lubricating coolant—extensive efforts of their own had failed to shorten the analysis from 48 hours. The State Technical Services Referral Network Office at Cleveland State University recommended a consulting biochemist who provided a method which can be completed in 8 hours.

A State Technical Services field engineer from Georgia Tech assisted a manufacturer of hydrocyclones (for separating sand and gravel) in the development of a liner to replace rubber liners which last about a year on metal ones which last a week. After a literature search, metallurgical consultation, and advice from the Engineering Experiment Station, some design changes were made. The new polyurethane liner has been in use more than a year with no apparent wear.

A small manufacturer of vacuum-formed and thermoplastic parts obtained assistance from a State Technical Services man and a member of the Chemistry Department faculty at Eastern Michigan University in selecting instruments and techniques for quality control of raw materials.

A Georgia manufacturer of hubs for computer and video-tape reels used an acid cleaner for its castings, and acid fumes and splashes were damaging to facilities. Planning a move to a new building, the company requested State Technical Services assistance in plant design. Referral was made to another Georgia company which formulated a special protective coating for their use.

Three Illinois construction companies participated jointly in a State Technical Services project using a time-shared computer. One of the companies estimated savings up to $60,000 in direct-labor costs alone during the first year. Starting in January, the project was expanded to serve 16 companies from a single direct-access computer with potential annual savings approaching $5 million.

A Michigan tool-and-die manufacturer asked the State Technical Services field engineer at Ferris State College for assistance in butt-welding stainless-steel sheets to permit him to produce an item at lower cost than outside purchase. Together with the NASA Technology Utilization Center at Wayne State University, the field engineer assembled applicable technical information and located a metallurgical consultant at Ferris State. The company not only learned to make the butt-welded product but is now planning to broaden its product line as a result.

West Virginia has a large number of small manufacturers who spray paint their products. Spray painting has been an inefficient operation as up to 50 percent of the paint is wasted and rejects often occur. The Applied Technology Center of West Virginia University, with STS support, is encouraging the use of an electrostatic paint process based on unlike charges of electricity causing the paint to adhere quickly and evenly. This process has great advantage as the front and back of the workpiece can be painted at the same time and with practically no paint loss. With paint equipment contributed by a manufacturer, West Virginia University is demonstrating this up-to-date method to manufacturers. Savings in paint, labor, equipment, rejects, floor space, and maintenance are being realized.

Community Television of Southern California, KCET, Channel 28, Los Angeles, produced and presented a series of one-hour programs under the title R&D REVIEW. An additional series of half-hour programs entitled INNOVATIONS has been approved. The use of educational television as a method of disseminating technical information to industry is in itself an innovation in communication. In addition to being shown on educational television stations in California, these programs are being shown on stations in 20 other States and the District of Columbia through the "BONUS circulation" of National Educational Television Network. Although only 22 percent of the R&D REVIEW telecasts and 15 percent of the INNOVATIONS telecasts had been aired up to January 1, 1968, a total of 221 mail and telephone referrals had been serviced.

In Georgia, a new type of compressed brick composed of sand rather than clay was introduced through the STS program. This is a wholly new product with only one other plant in operation in North America. A faculty member of the school of Ceramic Engineering worked closely with this company. In a similar fashion, new developments in the use of plastics instead of clay for bricks have been furnished to the brick industry in Georgia.

A Florida company interested in manufacturing light weight aggregate for construction blocks was provided technical assistance through the STS program

at the University of Florida. A search of the available technical literature and other determinations showed that a commercial product could be made only by closely controlling raw material compositions and firing schedules. The company is now planning the establishment of a pilot plant based on the technical information provided to them.

Mr. REILY. Although I was only recently appointed Director of the Office which the act established, I have had an intense interest in it since the first days of congressional consideration and am especially pleased to be able to assist you in your deliberations on its first extension.

PURPOSE OF THE ACT

The State Technical Services Act has a high purpose, to promote and encourage economic growth by supporting State and interstate programs to place the findings of science usefully in the hands of American enterprise.

Although it has been less than 3 years since the President signed the act on September 14, 1965, I am confident that the committee will find evidence that this purpose has already been served.

ASSESSMENT

We can assess the program today in terms of acceptance by the States, particularly by their legislatures which appropriate part of the matching base, by State universities which contribute technical talent and university funds, and by individual and corporate citizens of the States whose user fees are now accounting for nearly one-third of the non-Federal support.

Evidence of this acceptance is shown by the services and benefits that already have been provided to business, commerce, and industry.

More than 1,500 technical-service projects involving technical information and referral services, field services, counseling, demonstrations, and seminars—all designed to update the skills and knowledge of participants—are being conducted by more than 200 educational institutions and nonprofit organizations across the Nation.

Industries such as construction, ceramics, fishing, food processing, forestry, metalworking, mining, petroleum, printing and graphic arts, stone, textiles, and woodworking are learning how to apply technology to improve their processes, reduce their costs, solve problems, and turn out new products.

These local programs, tailored to meet the recognized needs of principal industries in the States, have been made possible through the enactment of this legislation.

In addition, I think it is important to take into account the level of quality and enthusiasm of the people who have been attracted to work in the program.

As I have visited the States and met their officials in my Office, I have been continually impressed by the stature, the ability, and the dedication of the people actually doing the work.

Finally, reflecting on the importance which Americans attach to this new program, is the stature and hard work of the advisory councils—required of each designated State agency under the law—in which 761 leaders in business, labor, technology, education, and local government meet regularly to guide our State programs.

I met yesterday with the advisory council from Maine and found them a very dedicated and enthusiastic group.

In short, I have never seen so much ability and enthusiasm per dollor appropriated in any major program.

STATE PARTICIPATION

Speaking of acceptance by the States, I would like to reiterate Dr. Kincaid's observation that all 50 States plus Guam, Puerto Rico, the Virgin Islands, and the District of Columbia have designated agencies and begun planning.

Twenty-four States submitted annual plans with matching funds in the very first year, and 46 are participating at present. In fiscal year 1969, we expect participation by every State and territory.

Another favorable indication of acceptance of the State technical services program is a clear trend by the States to build their programs faster than dollar-for-dollar matching will permit.

In an informal survey for fiscal year 1967, we determined that more than $1.15 in non-Federal funds went into the program for every Federal dollar and about $1.35 in 11 States where this trend is significant.

Still another measure of acceptance is a markedly increasing proportion of user fees in the non-Federal share of total funding. These are fees actually paid by companies and individuals who use some of the services made possible through the passage of this act.

There are four sources of non-Federal support: State appropriations, institutional funds, user fees, and contributions of services and property. In the 3 years of our program, user fees have accounted for more and more of the non-Federal share—about 6 percent in the first year and nearly one-third in the current year.

I think this is the soundest possible evidence of the acceptance of this new program by American industry and commerce. Together with the trend to overmatching in the States, this increasing user contribution places a double leverage on the Federal dollar.

SPECIAL MERIT PROGRAMS

The State Technical Services Act permits us to grant matching funds for technical service programs of special merit that have broad regional or national significance or employ new techniques not included in State programs.

We have used special-merit programs to strengthen and support the State technical services program at the State level and to encourage regional cooperation. Emphasis has been placed upon programs which will become self-supporting.

Exemplary of a special-merit grant is the interstate project at the University of Wisconsin for bringing new ideas to industry by means of a mobile laboratory. Topics of interest to the audience were selected from about 20 developments at the University of Wisconsin.

During the summer and fall of 1967, the laboratory—staffed by University of Wisconsin teachers and researchers—traveled over 5,000 miles and presented forty-four 1-hour demonstrations to some 825 managers, engineers, technicians, educators, and students.

In addition to Wisconsin industry, the mobile laboratory made trips to five neighboring States—Iowa, Illinois, Indiana, Ohio, and Michigan.

The State Technical Services Act authorizes allocation of 20 percent of our total appropriation for special-merit programs. However, due to the demands of State programs for the limited funds available thus far, we have restricted our special-merit programs to less than 10 percent.

REFERRAL SERVICES

The State Technical Services Act provides for referral services to assist and guide the States in the development and operation of the most effective referral and information services, taking into consideration those functions that can be best performed at State, regional, and national levels.

One of our major objectives is to provide a quick-switching referral service to all major sources of scientific and technical information through a single contact point in each State or region.

Significant progress is underway through a regional pilot program in the southeastern area of the United States in conjunction with the National Referral Center for Science and Technology.

A second major objective is to assist State program personnel in their field counseling and referral activities through regional seminars where they may learn of the most effective ways of dealing with the complex function of technology transfer.

The first such seminar is scheduled this summer. While primary emphasis is on the techniques of—and barriers to—technology transfer, information-technology developments which include elements of system design and operation are also included.

Since the State programs together will represent a major national effort in technology transfer, the third of our major objectives is to to reflect the requirements of this effort and the lessons learned as an important contribution to planning for a national information system.

INTER-AGENCY COOPERATION

The State Technical Services program deals with scientific and technical information generated by others and operates through direct cooperation with all Federal, regional, and State technology and information resources.

Through this large, decentralized system of participating institutions, the program is in a unique position to detect and eliminate duplication of effort.

Accordingly, we have initiated cooperative arrangements with other Federal agencies which include the National Aeronautics and Space Administration, the Department of Defense, the Atomic Energy Commission, the National Referral Center for Science and Technology, the Science Information Excange, the Small Business Administration, the National Science Foundation, the Department of Agriculture, and the Department of the Interior.

REGIONAL PROGRAMS

In less than 2 years since the beginning of projects under the act, 14 States—one-quarter of the States and eligible territories—are al-

ready participating in formal regional technical-service activities.

The six New England States have formed the New England Technical Services Board, and their first regional program has just been approved.

The seven Rocky Mountain States and Nevada have established a State Technical Services Council of the Federation of Rocky Mountain States, and they have a regional program in preparation.

In addition, seven Midwestern States are holding preliminary discussions on regional cooperation, as are three Middle Atlantic States and three Southern States. And there have been eight special-merit programs of regional significance.

The Public Evaluation Committee, in its recommendations to the Secretary of Commerce, has urged us to encourage such regional programs.

We concur completely in this recommendation and are doing all that we can to speed this trend and to help, where possible, in achieving the hard compromises and effective organizations which are necessary for regional cooperation.

APPROPRIATION AND ALLOCATION OF FUNDS

The State Technical Services Act authorized appropriations of $10, $20, and $30 million in fiscal years 1966, 1967, and 1968, respectively, and the States planned their programs on this basis.

Actual appropriations were $3.5, $5.5 and $6.5 million in those years, so that barerly one-quarter of the authorized appropriations were actually made.

Of the $15.5 million appropriated in fiscal years 1966–68, $13.9 million—90 percent—was returned to the States, as follows:

	Millions	Percent
Matched program grants	$9.7	63
Matched special grants	1.2	8
Planning grants	3.0	19
Total	13.9	90

The balance was divided between referral services to the States—$0.8 million or 5.3 percent—and administration—$0.7 million or 4.5 percent.

I might add that we are authorized 5 percent for administration.

Demand for Federal matching funds has exceeded the supply in each year. This year, for example, even though State officials well know that our appropriation is barely one-fifth of the amount authorized, we have received requests—actually backed by State matching funds—for $6.2 million, 41 percent more than the amount we could allocate to match State program funds.

It is felt that the proposed 2-year extension is the absolute minimum to sustain the interest, the vigor, and the quality of work in the program today.

The high purpose of the State Technical Services Act and the dedication to it by the administration and the Congress in authorizing appropriations of $10, $20, and $30 million in the first 3 years—attracted fine institutions and outstanding talent in State after State.

I would be very seriously concerned over our ability to keep this new asset with an extension of only 1 year.

In fiscal year 1969, in recognition of current national austerity, our authorization request and budgetary plans are based on an intention just to sustain the life of the State Technical Services program for 1 more year.

Mr. KEITH. I note you have eliminated part of your script. Is that because it is unnecessary or no longer true?

Mr. REILY. On page 10, I eliminated a paragraph which I would like to deal with on the basis of more current information in response to the chairman's opening statement.

Earlier, I eliminated an example of special-merit work just in the interest of saving time.

Mr. KEITH. There is no change in the evidence you want to offer. You are doing it to sharpen your testimony.

Mr. REILY. Yes, sir, and also to give you more current information. But I would not consider it a change.

Mr. KEITH. Thank you.

Mr. REILY. Looking ahead to fiscal year 1970 in the hope that important domestic programs such as this may begin to develop, our regional program officers have estimated the level of State program activity for which the individual States will be able to generate matching support, as follows:

Fiscal year 1970 State funds to be matched

	(*Millions*)
Northeastern	$2.89
Southern	3.19
Midwestern	3.00
Western	3.00
Total	13.73

Including special-merit programs, referral services, and administration—as authorized and directed by the act, this would indicate a level of nearly $20 million in fiscal year 1970.

ROLE OF THE OFFICE IN WASHINGTON

We now have 2 years of work behind us in this new program and are well into the third with the fourth planned for in detail.

Of the 46 States expected to have technical-service programs in operation by the end of fiscal year 1968, 24 will have 3 or more years of experience in such work, and 17 will have 2 years of experience; five States will be starting new programs.

In the course of our work with the States—which includes 54 State plans and approaches 113 State-program-years—we have gained a large and growing fund of knowledge of what works and what doesn't work, of what inviting avenues of approach are really dissappointing blind alleys, and of what the true cost of programs will be.

We are at the center of a brand new, thoroughly decentralized, and capably staffed national program, and we have learned a lot in a very short time.

This new knowledge is tremendously valuable to the States and to developing regional activities. It is the foundation for the sort of

counsel and guidance which the States expect from Washington as they build programs based primarily on their own resources and assessments of their own strengths and weaknesses.

For example, we have seen the effectiveness of field-service activities undertaken in North Carolina, Georgia, Michigan, Ohio, and other States and are encouraging the establishment of similar activities where they promise equal success but have not been considered.

As a result, in the 3 years of our work, the number of States with field-service programs has climbed from 12 to 35.

In the long run, I see the principal role of the Office of State Technical Services as, not a granting function, but one of teamwork with the States to assure that each State gains from the experience of every State and that the latest ideas and techniques for technology transfer are put to work promptly and cooperatively.

Thank you, Mr. Chairman and members of the committee. My associates and I will be glad to answer your questions and furnish additional information.

Mr. Chairman, that is the end of the prepared remarks. Should I go ahead at this point to address your question in your opening statement?

Mr. Moss. I think I would like first to address myself to a matter I have observed in the statement of Dr. Kincaid and in your statement and that is the fact that you make a request for open-end authorization.

It has been the policy of the House Committee on Interstate and Foreign Commerce during my years of service to make no such grants of open-end authorization.

Therefore, I hope that you are prepared to address yourself specifically to the minimums felt essential for the 2-year period that you seek to have this legislation cover.

I do not see any reason for us to operate under illusions here. We are all aware of the fact that there is going to be a significant vote in the House tomorrow dealing with reduction in levels of expenditure and the imposition of additional taxes.

There is no question but that whatever is authorized is going to be reviewed with great care and deliberations by the Committee on Appropriations.

So I think it would be very helpful if you can now give us figures for 1969 and 1970 within the context of the situation now existing.

Mr. KINCAID. Mr. Chairman, I do not think our point at all is that we are particularly interested in open-ended authorization but instead we hate to see the authorization at a low level which we think will be discouraging to the participating States.

Mr. Moss. Would we be doing greater service to authorize at a high level when the States know that it is not going to be provided? Should there not be a greater measure of realism? Actually, in Mr. Reily's statement there is a clear request for an open-end authorization. It is always puzzling to me why we continue to have the request for open-end authorization made to this committee in view of the very consistent history of the committee in refusing to authorize, one, any open-end authorization, and two, to authorize for periods longer than 3 years.

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We have followed that pattern for many years in any program under our jurisdiction.

Mr. KINCAID. Could I ask Mr. Reily to comment?

Mr. MOSS. Yes, indeed.

Mr. REILY. We have some budgetary figures worked out since the administration request was made which are based on informal inquiries of the States with respect to their plans and availability of actual State matching funds in ensuing years.

For fiscal year 1969, of course, we have a very firm program and are already receiving program requests. The budgetary estimate for fiscal year 1969 was $6.6 million. This has since been revised in the Department of Commerce during the appropriations process to $6.5 million which is the current request.

For fiscal year 1970 on the same basis of inquiry of the States and their plans and projected availability of a matching base our estimate for fiscal year 1970 is for $14 million.

At the same time this was being done we carried the estimate 1 more year for our own guidance and planning in the Office and in fiscal year 1971, our estimate is for $20 million.

Mr. MOSS. Now on the $6.6 million for fiscal 1969, is that covered by appropriations by the State legislatures, the matching portion?

Mr. REILY. Thirty-five of the 46 States now in the program are meeting part of their matching base by appropriation. That figure has climbed in the 3 years of the program. In many cases the programs began with university resources being the principal matching base.

We feel that for the program to have any permanent substance that there must be appropriations by State legislatures.

We are very pleased with the level of 35 States out of 46 which are meeting part of their matching obligation by appropriation.

Mr. MOSS. Will you supply for the record at this point the breakdown of the State funds and the sources of those funds for matching the 1969 program and supply the same information to the extent that it is available for the 1970 and the 1971 projections?

Mr. KINCAID. Mr. Chairman, you said State funds. There are also user fees. Do you want us to address that question, too?

Mr. MOSS. Either your estimates or the estimates of the participating States. I think you should supply us with the estimates of the total of user fees and whether those estimates are yours or the estimates of the States that you service.

Mr. KINCAID. Yes, sir; we will do that.

(The information requested follows:)

DEPARTMENT OF COMMERCE STATEMENT ON BREAKDOWN OF STATE FUNDS, AND ESTIMATED USER FEES

In accordance with the request of the Chairman, the following tables were prepared showing our estimates of Federal funds required to match State funds which will be available for technical services programs for fiscal years 1969, 1970, and 1971. These amounts are preliminary estimates and are based on information gleaned from a combination of sources, including previous programs submitted by the States, State 5-year Plans, informal conversations with State designated agency personnel, and personal insights into the capability of the developing State programs.

In each year, the State request for a Federal program grant must contain the Governor's certification that the required State matching funds will be available. State matching funds may come from four primary sources: (1) State appro-

priations, (2) University or institution funds, (3) User fees charged for services, and (4) the fair market value for contributed services and property.

The overall budget requirements for the operations of OSTS for fiscal years 1969, 1970, and 1971 are presented below. It should be noted that the plans for fiscal years 1970 and 1971 are general estimates of requirements and in no way reflect a final budgetary commitment.

	Fiscal year 1969	Fiscal year 1970	Fiscal year 1971
Administration	330,000	700,000	1,000,000
Special merit grants	600,000	2,800,000	4,000,000
State program grants	5,370,000	9,800,000	13,750,000
Referral services	300,000	700,000	1,250,000
Total	6,600,000	14,000,000	20,000,000

A further breakdown by State of the estimated State Program Grant requirements is as follows:

State	Fiscal year 1969	Fiscal year 1970	Fiscal year 1971
Alabama	$99,000	$200,000	$250,000
Alaska	54,800	100,000	150,000
Arizona	73,800	150,000	200,000
Arkansas	75,200	100,000	150,000
California	258,000	650,000	900,000
Colorado	82,200	150,000	200,000
Connecticut	90,800	100,000	150,000
Delaware	57,600	70,000	100,000
District of Columbia	59,300	60,000	80,000
Florida	116,600	150,000	200,000
Georgia	103,400	200,000	300,000
Guam	62,600	70,000	100,000
Hawaii	60,000	100,000	150,000
Idaho	65,400	70,000	100,000
Illinois	183,800	550,000	750,000
Indiana	122,800	200,000	300,000
Iowa	87,800	200,000	250,000
Kansas	80,200	100,000	150,000
Kentucky	101,800	130,000	180,000
Louisiana	94,400	140,000	200,000
Maine	67,800	70,000	100,000
Maryland	103,700	100,000	150,000
Massachusetts	124,200	150,000	200,000
Michigan	154,200	450,000	650,000
Minnesota	96,400	250,000	350,000
Mississippi	90,200	100,000	150,000
Missouri	108,400	400,000	550,000
Montana	65,800	100,000	150,000
Nebraska	70,200	100,000	150,000
Nevada	60,400	140,000	200,000
New Hampshire	61,600	60,000	80,000
New Jersey	141,200	100,000	150,000
New Mexico	69,200	100,000	150,000
New York	272,000	700,000	1,000,000
North Carolina	111,400	300,000	400,000
North Dakota	70,000	70,000	100,000
Ohio	178,800	500,000	700,000
Oklahoma	82,000	130,000	180,000
Oregon	74,600	140,000	200,000
Pennsylvania	211,000	300,000	400,000
Puerto Rico	82,600	150,000	225,000
Rhode Island	68,900	70,000	80,000
South Carolina	83,000	130,000	180,000
South Dakota	70,600	70,000	100,000
Tennessee	95,700	200,000	250,000
Texas	183,000	300,000	450,000
Utah	68,400	100,000	150,000
Vermont	67,100	70,000	100,000
Virgin Islands	52,200	60,000	75,000
Virginia	113,700	140,000	200,000
Washington	89,200	200,000	250,000
West Virginia	86,700	90,000	100,000
Wisconsin	103,600	400,000	600,000
Wyoming	61,900	70,000	100,000
Total	5,370,000	9,800,000	13,750,000

For an optimum program the Federal funds must nearly equal the funds available from the State. So far in the program the States have overmatched the Federal funds to the extent of $1.15 to $1. It is felt that this is about the maximum amount of overmatch which the States are likely to sustain at this stage of the program.

While the information available in our Office does not provide the exact nature of the State matching funds for fiscal years 1969, 1970, and 1971, we do have information on the matching fund resources proposed by them for fiscal year 1968. The following list provides information obtained from the State programs submitted to OSTS for funding during fiscal year 1968.

FY 1968; PROPOSED SOURCES AND AMOUNTS OF NON-FEDERAL MATCHING FUNDS

	State appropriations	Institution funds and contribution services	User fees; private contributions	Total
Alabama		119,200	44,808	164,008
Alaska	43,000			43,000
Arizona		51,556	25,778	77,334
Arkansas				
California	20,470	3,152	120,868	144,490
Colorado	5,000	54,390	10,394	69,784
Connecticut		77,859	15,575	93,434
Delaware		11,676	7,429	19,105
District of Columbia		21,326	21,250	42,576
Florida				
Georgia	197,322			197,322
Guam				
Hawaii	44,954	4,723	5,400	55,077
Idaho				
Illinois	10,815	21,821	324,494	357,130
Indiana				
Iowa				
Kansas	71,408			71,408
Kentucky				
Louisiana	2,363	99,170	29,036	130,569
Maine	21,666	27,060	5,265	53,991
Maryland				
Massachusetts				
Michigan	97,203	13,538	29,290	140,031
Minnesota	74,075	56,420	35,351	165,846
Mississippi				
Missouri				
Montana		54,435	5,375	59,810
Nebraska	55,052	12,382	13,039	80,473
Nevada	3,420	49,003	30,040	82,463
New Hampshire	28,241	6,890	7,010	42,141
New Jersey				
New Mexico				
New York	261,069	147,775	83,739	492,583
North Carolina	245,988	19,674	33,475	299,137
North Dakota				
Ohio	152,347	43,254	31,946	227,547
Oklahoma	13,043	9,350	90,800	113,193
Oregon				
Pennsylvania	200,000			200,000
Puerto Rico				
Rhode Island	14,527	25,583	6,111	46,221
South Carolina		121,675	12,000	133,675
South Dakota				
Tennessee		65,114	13,320	78,434
Texas				
Utah		35,330	48,588	83,918
Vermont				
Virgin Islands	22,860			22,860
Virginia				
Washington				
West Virginia	51,562	37,719	1,600	90,881
Wisconsin		22,967	174,606	197,573
Wyoming	9,967	38,679	4,555	53,201
Totals	1,646,352	1,251,721	1,231,142	4,129,215
Percentages	39.9	30.3	29.8	100.0

Although the above list does not contain information on all of the States participating in fiscal year 1968, we believe the general nature and amounts of the sources are clearly established. We estimate that the source of non-Federal funds will follow the pattern indicated above for at least the next several years. Therefore, in response to the Chairman's request for estimates of the total of user fees, and on the above basis, we have made preliminary estimates for fiscal years 1969,

Estimated user fees:

Fiscal year 1969	$1,600,000
Fiscal year 1970	2,920,000
Fiscal year 1971	4,100,000

Mr. Moss. Mr. Keith.

Mr. KEITH. Thank you, Mr. Chairman.

You have a total of about six witnesses you hope to hear this morning?

Mr. Moss. We will hear them all if we can.

Mr. KEITH. I would like to have for the record one observation from the appropriate member of your team, some comment as to what the first regional program is that has been undertaken in the New England States.

Mr. REILY. The first program in the New England States is one which has to do with venture capital.

It is being run on behalf of the New England Technical Services Board by the Babson Institute.

The purpose of this program is to show the small technological entrepreneur the importance of and the means of dealing with venture capital to expand technically based businesses and, of course, there is abundant evidence of this in the New England area.

Another aspect of the program is to try to show some potential venture capital sources for technical enterprise the value and the success of earlier technical ventures as users of venture capital.

Mr. KEITH. This sounds rather unique and imaginative.

I would appreciate it if you would send me a brief résumé as to the nature of this effort.

Mr. REILY. Yes, sir.

(The information requested follows:)

DEPARTMENT OF COMMERCE STATEMENT ON TECHNOLOGY/VENTURE CAPITAL SEMINARS

Three sets of dual seminars will be presented by the Babson Institute (Wellesley, Massachusetts) at Boston; Hartford, Connecticut; and Durham, New Hampshire. The seminars are designed to encourage innovators and sources of venture capital to combine their efforts to produce new products and services, thereby aiding the New England economy.

The first seminar of each set will be directed to the financial community including the full range of lenders and investors, comprising representatives of small business investment companies, insurance companies, investment funds, trusts, individuals, and banks.

The second seminar of each set will bring together the financial community which has become interested in venture capital investment based in technological innovation, and technologically innovative entrepreneurs who are seeking initial or expansion capital. A specific effort will be expended to attract principals from highly technical research and development concerns and service companies in both the hardware and software segments of technologically innovative industries:

Examples of topics to be examined are given below. The primary focus is on encouraging and effecting technology transfer to business, commerce and industry in New England. The financial factors in effecting this transfer will be discussed where pertinent, such as marketability factors, investment criteria and capital sources.

APPRAISAL OF INVENTIONS AND TECHNOLOGICAL OPPORTUNITIES

State of the art surveys in science and technology.
Imminent breakthroughs in science and technology.
Prospective industries based on new development in science and technology.
Short-, medium-, and long-range viewpoints of industrial and consumer needs.
Obsolescent industries and required infusion of science and technology.

PRODUCT AND SERVICE SELECTION TECHNIQUES

Marketability factors.
Market durability factors.
Production ability factors.
Market growth potential.

NEW ENTERPRISE FORMATION

Organization.
Legal, tax, and human factors.

INVESTMENT ANALYSIS, EVALUATION, AND DECISION VENTURE CAPITAL AVAILABILITY

Criteria and requirements.
Sources and clientele.
Responsibilities and opportunities.

FINANCIAL PERFORMANCE

Planning and measurement.
Payback index.
Long-range profitability.

Mr. KEITH. Now, you say on page 12 there is $2.89 million being spent in the northeastern region.

Can you give me a very short résumé of what that is and supplement that with more details later?

Mr. REILY. Yes. The $2.98 million figure on page 12 is a projection informally developed between the northeastern regional officer and in my Office and the States in the northeastern region in the United States which, incidentally, is the mid-Atlantic area north to New England, of State funds which would be available.

These would be along the lines of present work in that area, expanded according to the plans of the State to expand.

Mr. KEITH. If you would give me a brief memorandum on that I would appreciate it.

(The information requested follows:)

DEPARTMENT OF COMMERCE STATEMENT ON AMOUNT OF FEDERAL FUNDS TO BE MATCHED IN THE NORTHEAST REGION TECHNICAL SERVICES PROGRAM

The amounts provided in the testimony as estimates for the various regions for fiscal year 1970 indicated that the Northeastern region could match $2.89 million in State program grants. These figures are preliminary estimates made by OSTS and are based on information gleaned from a combination of sources, indicating previous programs submitted by the States, review of the State 5-year plans, informal conversations with State designated agency personnel, and personal insights into the capability of the developing State programs. The individual amounts are considered to be the maximum amount for which the States could generate matching funds and develop technical services programs for fiscal year 1970.

Northeast region

Connecticut	$150,000
Delaware	100,000
District of Columbia	80,000
Maine	100,000
Maryland	150,000
Massachusetts	200,000
New Hampshire	80,000
New Jersey	150,000
New York	1,000,000
Pennsylvania	400,000
Rhode Island	80,000
Vermont	100,000
Virginia	200,000
West Virginia	100,000
Total	2,890,000

Mr. KEITH. Finally, in advancing the cause of this legislation, representatives of the Department of Commerce pointed out the great need for regional technical services so far as the fishing industry is concerned.

We have checked it with your office or subordinate offices and discovered that something is going on largely out at the University of Rhode Island in the field of fishing resources.

I would like to have a brief résumé of that for my personal information. It would help me in winning support for this program amongst the New England delegation.

Mr. REILY. Yes, sir. The Maine program has a fisheries project and so do a pair of the Northwestern States. So we do have some information on that.

Mr. KEITH. I believe the University of Rhode Island is setting up a regional marine resources center coordinated with the Southeastern Massachusetts Technological Institute and perhaps another educational institution where they are furnishing information for fishing interests both in the ocean and for the other problems in allied industries.

I am very much interested in that, particularly in view of the fact that it was offered as an argument for the need of such a program. I would like to have a brief summary as to what is being done for the fishing industry on a nationwide basis and particularly as it pertains to the northeastern part of the country.

Mr. REILY. Yes, sir; we will get it to you.

(The information requested follows:)

DEPARTMENT OF COMMERCE COMPILATION OF STATE TECHNICAL SERVICES PROJECTS IN THE UNITED STATES RELATED TO FISHING

FLORIDA

New Technology in the Fishing Industry.—Five-day conference on technological developments and modern production methods, with subsequent distribution of the proceedings; University of Miami, Coral Gables.

MAINE

Fishing Industry.—Introduce new technology into eliminating ordors from processing of fish cuttings, and also work with Maine Department of Sea and Shore Fisheries in promoting new techniques in shrimp fishing industry; Univesity of Maine, Orono.

PUERTO RICO

Modern Electronic Equipment for the Fishing Industry.—Demonstration of electronic equipment for locating schools of fish; Commonwealth Department of Commerce, San Juan.

OREGON

Technical Service to Fishing Industry.—Field service, seminars, demonstrations, and newsletter will be used to inform the fishing industry of latest technology, trends, and conditions; Oregon State University, Corvallis.

RHODE ISLAND

New England Marine Resources Information Center.—Link fishing and other marine-based industries with scientific and technical information sources to solve problems and exploit opportunities; University of Rhode Island, Kingston.

VIRGINIA

Marine Resources Technical Service for Managers.—Prepare and issue business-oriented technical publications concerning marine resource research; publicize information sources; College of William and Mary, Williamsburg.

WASHINGTON

Useful Radiation Applications for Fisheries and Agricultural Products Industries.—Compile information on latest developments in radiation techniques to fisheries and agricultural products industries through preparation and dissemination of brochures, bulletins, and memoranda; University of Washington, Seattle.

Mr. Moss. Mr. Blanton.

Mr. BLANTON. I have no questions.

Mr. Moss. Mr. Watkins.

Mr. WATKINS. Mr. Chairman, I would like to compliment Mr. Kincaid, also Mr. Reily, on their enthusiasm for the program.

I must say that I join with you in respect to what you are doing. As usual, Mr. Chairman, you have covered the point very well, even though I am concerned at the present time about money, on extending this program to 1970 and 1971.

I have no feeling that the new Congressmen won't join in with this program. I see no need to repeat the statement made by our distinguished chairman. I do not see where we are going to go to get the appropriations with the situation that exists in this country today, and that is no money.

I think you are familiar with that. I think the work is highly technical and I think it is most helpful to every State.

I must say I have no argument with the program, Mr. Chairman. My interest is in the money and whether we should extend it for 3 years I could not answer it now.

I judge we are working on the House bill 16824 which we are considering here. I think perhaps we might delve into S. 3245.

Mr. Moss. Both are before the committee. At the time of the markup it will be the will of the committee as to which piece of legislation we use for our purposes in marking up.

Mr. WATKINS. Due to the fact that I am from Pennsylvania, represent the State of Pennsylvania, my prime interest is first my own State, I would like a breakdown of what is happening in the State of Pennsylvania under your program.

With what enthusiasm is the State of Pennsylvania accepting it.

Mr. REILY. We will be glad to supply that.

May I say that Pennsylvania has one of our most effective programs. I visited a Pennsylvania firm in Reading which makes knitting machinery. They had improved one product to make a higher speed knitting machine in the course of which they changed the material from which the main needle driving cam was made.

This is the heart of their machine. Although nothing showed up at the beginning, when these machines were in production and in use all over the world because they serve a world market, this cam began to fail by breaking. They had no inkling of what was the matter.

It was a State technical man from the Penntap operation at Penn State that showed them the problem. It was a tricky thing. The new steel had chromium in it. The chromium resisted the hardening process that they had used successfully up to that time.

Here was a technical trick that they weren't prepared to solve but with STS program help they did.

Mr. WATKINS. I would still like to have a breakdown to explain what is happening.

Mr. Moss. We will hold the record open at this point to receive the information requested by Mr. Watkins.

(The information requested follows:)

DEPARTMENT OF COMMERCE RESUME OF STATE TECHNICAL SERVICES PROGRAM IN PENNSYLVANIA

1968 is the third year that Pennsylvania has operated under the State Technical Services Act of 1965.

Initially (in 1966), the technical area of emphasis was new material: those that have gone past the basic research stage where commercial potential is obvious but not as yet commercially-developed to the stage of being well-advertised and established in use.

The new materials—especially the ones based upon ceramics, glass, inorganic synthetics, carbon, and the uncommon nonferrous metals—are frequently based on Pennsylvania raw materials and are used by industries found in the Commonwealth. These industries are characterized by a large number of establishments, many employees, significant value of production and value added by manufacture. However, there are also many smaller materials firms having few technical employees.

During the second year (1967) the technical area was broadened to include more of the materials, not just new materials. However, in only two years, PENNTAP (Pennsylvania Technical Assistance Program) could not hope to provide "full-service" technical communication concerning all materials at all levels of use. Therefore, working toward this goal, the materials area is being expanded even more in 1968. Through the technical information centers, the seminar series, and the radio and television presentations, PENNTAP will be concerned with the utilization of materials from their extraction or recovery as raw materials to the point of final consumption.

In addition to the materials field, PENNTAP is going towards other long-range goals by phasing-in the technical areas of bioscience and computer technology. While in-depth penetration of these subjects will not be made in 1968, limited activity will be initiated.

PENNTAP is also moving towards a complete statewide communications network. With the Library Information System and the Mobile Library extending coverage each year, information encompassing the entire technical spectrum is available to business and industry throughout the Commonwealth. Specialized data is available at regional centers.

The Pennsylvania program is administered through the Pennsylvania State University with Dr. Eric A. Walker, the President of the University, the designated official for the program. Dr. H. LeRoy Marlow, Director of PENNTAP, is immediately in charge of the program.

The following are the projects in the fiscal year 1968 Pennsylvania program:

1. *PENNTAP Information Center.*—Disseminate useful knowledge obtained from the technical literature, concentrating on fabricated metal and metal plating and coating; Franklin Institute of Technology, Philadelphia.

Total cost, $60,071; Federal grant, $30,036.

2. *Library Information System.*—Process requests from industry and supply literature to answer technical questions from seven areas in the Commonwealth; Pennsylvania State University, University Park.

Total cost, $62,724; Federal grant, $31,362.

3. *New Technology in the Materials Field.*—Traveling one-day seminars and one and two week intensive courses on various aspects of materials technology for industrial scientists and engineers; Pennsylvania State University, University Park.

Total cost, $47,856; Federal grant, $23,928.

4. *Carbon and Graphite Literature Dissemination.*—Prepare and disseminate to industry a computer data file on carbon and graphite literature; Pennsylvania State University, University Park.

Total cost, $27,945; Federal grant, $13,917.

5. *PENNTAP Radio Programs and Audio Library.*—Distribution system for tapes and experimental radio programs for scientific and engineering information dissemination; Pennsylvania State University, University Park.

Total cost, $49,566; Federal grant, $24,783.

6. *Meteorological Information Dissemination System.*—Weather forecasts based on modern techniques and carefully tailored to operating needs will be provided for limited periods to fuel oil distributors and construction contractors in northeastern and central Pennsylvania to effect reduced operating costs; Pennsylvania State University, University Park.

Total cost, $14,552; Federal grant, $7,276.

7. *Information Switching Program.*—Disseminate technical and scientific information from both published and report literature, with emphasis on information relating to materials, and their properties and processes; University of Pittsburgh, Pittsburgh.

Total cost, $65,668; Federal grant, $32,834.

8. *Mobile Library Program.*—Through a "researchmobile" inform business, industry and research organizations of available scientific and technical information and the means by which it can be quickly located and obtained for use; Carnegie Library of Pittsburgh, Pittsburgh.

Total cost, $53,075; Federal grant, $26,537.

9. *Color Measurement Seminars.*—Present the latest technological advances in industrial color matching in three-day seminars; Philadelphia College of Textiles, Philadelphia.

Total cost, $11,384; Federal grant, $5,692.

10. *Textiles in the Engineering Sciences.*—Four seminars on (1) the structure and properties of textile materials, (2) engineering of textile materials, (3) handling of textile materials, and (4) new textile fibers; Philadelphia College of Textiles, Philadelphia.

Total cost, $14,250; Federal grant, $7,125.

11. *Computer Simulation Techniques.*—Eight three-hour lectures and four three-hour workshops on application of computer simulation techniques to solve production control and inventory problems of small manufacturers; Duquesne University, Pittsburgh.

Total cost, $6,480; Federal grant, $3,240.

Mr. Moss. Mr. Stuckey.

Mr. STUCKEY. No questions.

Mr. Moss. Gentlemen, apparently you have satisfied the needs of the committee at this point.

I hope that you will expedite the submitting of the information requested in order that these hearings can be wrapped up and the legislation put together as promptly as possible.

We thank you for appearing this morning.

Mr. REILY. Thank you, Mr. Chairman.

Mr. Moss. As our next witness I am very pleased to welcome an old friend and former colleague in the House, Carl Elliott, chairman of the Public Evaluation Committee on State Technical Services, Birmingham, Ala.

STATEMENT OF CARL ELLIOTT, CHAIRMAN, PUBLIC EVALUATION COMMITTEE ON STATE TECHNICAL SERVICES; ACCOMPANIED BY EVERETT F. ZURN, MEMBER OF THE COMMITTEE, AND EDWARD W. BISONE, STAFF ASSISTANT

Mr. ELLIOTT. Thank you very much, Mr. Chairman.

I would like to have, if I may, a member of my public evaluation committee, Mr. Everett Zurn of Erie, Pa., sit with me, and I would like to have Mr. Ed Bisone, who is the staff assistant to our committee, sit with me also.

Mr. Moss. You may proceed.

Mr. ELLIOTT. Mr. Chairman, I have had the wonderful experience in the past 10 months of chairing a committee which you provided for in 1965 in the passage of this law to evaluate the activities and the operation of the law.

I have had an opportunity in that time to study the law and I think it is one of the best written laws that I have seen in my time around the Congress.

It is well written and well structured and it can be operated in such a way as to do a very great deal of good.

In my nostalgic reflections on the Congress, I am sorry I was not able to be here and help pass that law, I think it is so good. It is the only law that I know of that is designed to help the small businessman in this field of technology transfer, the subject that I was interested in when I was in Congress.

As a citizen, I can't be so much interested in seeing the business of our country get into fewer and fewer hands. I am not as interested in that as I am in seeing the doors stay open.

Now, this State Technical Services Act is a door opener. It would make in theory, and it is only in theory up to now I must say, by and large, it would make in theory the results of all the wonderful things that we are doing in research and development in this country, paid for largely by the Federal Government, as the chairman knows, about three-fourths by the Federal Government—it would make the results of that program fairly immediately available to small business.

Now, the average small businessman, as the chairman so well knows, is not able to have engineers and technicians, experts of various kinds around his business.

I can illustrate that best by saying in my own State of Alabama there are 22,000 small businesses and Alabama is still pretty largely a rural State.

I believe in Mr. Zurn's State, if I remember the figure, it was 85,000 or 90,000 small businesses employing, let us say, 50 or fewer people, and usually much fewer.

The more you break down the number employed, the larger the number of businesses get to be.

It seems to me that this is something that only government, by and large, can do. You, Mr. Chairman, and others who helped you, designed this program in 1965 to make it a local program as much as any I have seen, programs operated by people at the State and community levels, local people. They work on local resources.

And even in the very meager effort that has been made up to this point, and it has been much, much too meager—even with that

meager effort we have found all over this country of ours wonderful examples, sometimes real dramatic examples, of how these people have turned technology to the use of some local mineral or metal or stone or printing or something else so as to achieve an outstanding result.

If somebody took the time even now, if somebody took the time to really survey in depth all of this program, he would find that there are several thousand people, in my judgment, who are working today and earning wages because of the small effort we have made today in this program.

This program is based on local initiative and know-how. It has local advisory committees. It ought to have a national advisory committee. It does not have but it does have local advisory committees.

The results, of course, are local. They fit the community. What has been done to date has been based pretty largely, I must say, on the dedication of the colleges of this country, the universities.

They have taken this program, Mr. Chairman, and with almost no money somehow or other they have made it work today.

I don't think this program has ever spent over $5 million or $6 million in any year since it started. It can't operate on that. I will say this: I think that you ought to extend this law for 3 years and I think you ought to authorize about $15 million for the first year and about $20 million for the second and about $25 million for the third and you are still running much, much below——

Mr. WATKINS. Mr. Chairman?

Mr. MOSS. Mr. Watkins.

Mr. WATKINS. Mr. Elliott, you are talking about jumping figures pretty high. You realize what is happening in this Federal Government today, don't you?

Mr. ELLIOTT. I think I know a little about it, Mr. Watkins.

Mr. WATKINS. I will listen to anyone from Penn State. It makes me happy because my grandson graduated from there and served in Vietnam and I am very proud of Penn State, and I know Penn State is one of the greatest universities in the world, but when you get on this money just take it a little easy here.

We are having a tremendous job on our hands to try to make a paltry cut of $6 million. We are thinking of restricting the President to $180 billion. So take it easy on jumping this money and tell us what the program is doing.

Mr. ELLIOTT. You invited me to give you the benefit of my recommendations and that is what I am doing.

Mr. WATKINS. Let us think in terms of cutting back on it a little bit.

Mr. ELLIOTT. Your predecessor 3 years ago said $10 million, $20 million, and $30 million.

Mr. WATKINS. Since 3 years ago there has been a big change in the country.

Go ahead. I am enjoying it.

Mr. ELLIOTT. You and I know, Mr. Watkins, and other members of the committee, that there is only one really effective way to do this job. That is to go see the people involved.

You can do a little by newsletter and that kind of thing but really, if you are going to impress a man on the importance of your business, you go see him.

Now, the weakness of this program right now is that we don't have enough money to send anybody to see these small businessmen to help them with the technology transfer that a great many of them need.

Mr. WATKINS. You should encourage the small businessman to come to you.

Mr. ELLIOTT. We are doing that. The small businessman through user fees and that type of thing is paying us probably 25 or 30 percent of the cost of this program at the present time.

Now there is a limit, it seems to me, on which the little fellow, and I am talking about the 22,000 small business people I referred to——

Mr. WATKINS. We have many of them in Pennsylvania.

Mr. ELLIOTT. About 90,000.

Mr. WATKINS. How many thousand?

Mr. ELLIOTT. It is 80-odd thousand.

Mr. WATKINS. Small businesses come and go, we know that.

Mr. ELLIOTT. Unfortunately, a great many of them have to go out because of lack of technology.

Mr. WATKINS. I feel I am interrupting you. You go on.

Mr. ELLIOTT. No, I want you to. I served in Congress about 16 years. Now don't you worry about interrupting me.

Mr. MOSS. I might say for the benefit of our good friend from Pennsylvania that Carl Elliott served on the committee that made a rather extensive study of the contracting practices, particularly in the field of research, Federal aid, funded research.

I believe he is as well informed on the scope of Federal involvement in research and the type of technology development as a result of the expenditure of Federal dollars as any present or past Member of Congress.

As a result of your efforts, a special subcommittee was established of the Committee on Government Operations, chaired by Congressman Reuss of Wisconsin.

The report filed with this House prior to your leaving was an excellent one giving guidance to the House. I would suggest, however, that while we would be very much concerned with the value of the services provided here through the States to business, we must recognize that small business alone is not the only beneficiary.

It is business at all levels and of all sizes. The transfer of technology are important both to the large and the small and frequently avoid very costly duplication by more timely information being provided to the business community.

Mr. WATKINS. Mr. Chairman, I join with you in deep respect for Mr. Elliott.

You keep telling us about the merits of this program. I think it is good. I like to hear you talk. I wish you had had a prepared statement.

Mr. ELLIOTT. Listen, when you are earning money to pay the debts that you made in an effort to serve the people in Congress for a long time you don't have the staff facilities a lot of times that you need to prepare these statements.

I won't be preparing, the chances are, statements on something like this because I don't have the time and the money. That is the truth.

The colleges have done as I have said, Mr. Chairman, a wonderful job in making this program work with a very minimum of money.

Now they can't continue to go the pace they are going now, in my judgment. Unless we provide enough money to do this job just fairly

well, then we have a wonderful program that is not meeting, and can't meet, very many of its expectations.

This is not a $5 million a year program. We might as well face facts about it. It is not that kind of program. It is the only program that I know of, of this nature, for the benefit of small business.

I would hate, myself, as a citizen, to see it cut out. The amounts of money that we speak of compared to similar efforts that we have made in other fields and which the members of this distinguished committee are familiar with, is chickenfeed.

If we are going to have a good program we are going to have to extend it and encourage these States who have gone all out on the theory that it was a permanent program and a growing program, and we are going to have to extend it and encourage them and give some more money.

That is as simple as it can be. If we can't afford it, Mr. Watkins, then we can abolish it.

Mr. WATKINS. Mr. Chairman, with your permission I would like to yield to Mr. Springer.

Mr. MOSS. The Chair is very pleased to welcome the distinguished ranking minority member of the Committee on Interstate and Foreign Commerce and to yield to him. He always makes a very worthwhile contribution.

Mr. SPRINGER. Thank you, Mr. Chairman.

I did want to come here because I was one of the originators of this program.

Dean Everett of the University of Illinois was the first one that I know of in this program that I ever heard of.

We had an awful time, may I say to my distinguished colleague from Alabama, to sell this program. I never had such hard work in all my life. This was the hardest piece of legislation that I ever worked on to sell because it is hard to explain.

When you are talking about trying to help small industry improve anything it is pretty hard to do. When I watched them in Illinois try to do what they were doing there were a lot of people in the industry who doubted the value of the program.

I think we have made some inroads since the program was started in actually selling it on the ground floor there. It has not been easy, may I say.

I was interested in the program as it came over from the Senate. If you can get a 3-year extension you will be fortunate before we get through with this because there will be a lot of sentiment to limit it to 1 year.

I don't think there will be a chance of increasing the appropriations, to be honest with you. I think maybe it is needed but I don't believe there will be any chance this year.

This is the tightest thing I have ever seen around here. I have never seen anything as tight as it is around here now and with some justification because we have money troubles.

If you want to hear about them, come over tomorrow afternoon and you will hear 4 hours of it before we vote.

I will state to you that I will work as far as I am concerned, to try to get something out. I will have to wait to find out what my members think about this. There is still some doubt on my side and on the other side, also.

I will be happy to support the bill. The money is another factor. I did want to tell you, frankly, money is going to be the big problem. But I think the program is needed.

Mr. ELLIOTT. Of course, I realize that there is great pressure to cut all of these programs. But there is a point below which you can't cut a program and expect it to do good. This program specifically has to have some means to get its message out to the small businessman. That is what it is lacking now.

It is making as much progress with $5 million or so as any program could but it needs more than that. I might say that I am serving without compensation on this committee. I am trying to pay my civic rent, my national rent. I have given this evaluation committee maybe 30 days of my time in the past year.

I think I would be derelict in my duty if I did not tell you the way I see it when I come here to testify. That is the reasons.

I am in sympathy with the fact that expenditures are very high but I am also in sympathy with keeping the doors to technology open to these small businesses.

Mr. SPRINGER. I agree with you. We are going to have a difficult time on the floor. This bill will be questioned. I can see that we are going to run into trouble more this time than before because of money problems.

Mr. ELLIOTT. With your support and guidance, I am sure we will get something, Bill.

Mr. Chairman, that is all I have to say about it. If you have questions I will do my best to answer them.

I have been all over the country and I have observed this program. Some States have a real fine program going. Pennsylvania has one of the best in the entire country. Some of the States have been slow in getting started.

The program in the chairman's State is not as good a start as it ought to be. I have looked at it in California. It will be improved upon. This program is only 2 years old at best.

We have been through a period of experimentation, tooling up that had to be gone through. Maybe it has been just as well that we have not had many funds to spend up to this point.

But now if the program is going to mean anything, if your action is going to mean anything, the action you took in 1965, it has to have a lift. That is putting it as simply and bluntly as I know how to put it.

Mr. Moss. Of course, as you learned during your many years of service here, we are faced with the ideals and the realities. Ideally we would like more money. I think in this program, perhaps far more than most coming before this committee in a very short period of time we could prove quite conclusively that a dollar invested, and I think this is an area of investment, would yield in new revenues directly from businesses and from increased taxation from employees, far more than the amount invested.

But as Congressman Springer pointed out and as Congressman Watkins has mentioned, we have a very difficult problem confronting our Congress.

I think the consensus of the committee is one of strong desire to report the best possible legislation within the clear context of the realities of the moment. I am confident that not only will we have the assistance offered by Congressman Springer, and I must reaffirm his

statement, he gave strong leadership in the original enactment of this program, I think we can look for that type of support generally from the committee.

Mr. Keith, do you have any questions?

Mr. KEITH. Not at this time, Mr. Chairman.

Mr. Moss. If not, unless the other gentlemen have statements they would like to make I want to express the appreciation of the committee for your appearance here and for the additional information you have supplied us.

Mr. ZURN. Except, Mr. Chairman, to affirm the fact I am happy to be here with Chairman Eliott, to be part of this testimony on the hearing and as a member of the public evaluation committee in the past year in traveling around with Carl, looking at this from a business viewpoint which I represent, certainly this is one of the most effective programs, as you have already mentioned, not only for small business but large business as well, to be part of the technology which is available but needs to be transferred down to business to make American business and keep American business ahead in the world.

This is our problem today.

Mr. Moss. Thank you.

Mr. ELLIOTT. Thank you, Mr. Chairman.

Mr. WATKINS. I am glad, Mr. Elliott, you said that Pennsylvania was far ahead. You know, we have a motto I would like to get in the record over my chairman's objections.

Mr. Moss. The Chair will assure the gentleman that he will not take a parochial view.

Mr. WATKINS. We have a motto in Pennsylvania that we lead and others follow.

Mr. ELLIOTT. Let me say you have a wonderful program. You have a man of energy and ambition and imagination heading it up, Dr. Marlowe, who I think is here today. Dr. Marlowe took the law which the chairman knows that I sponsored a few years ago, the Library Services Act, he took that act and the State Technical Services Act and put the two together in Pennsylvania and designed a sort of technology bookmobile to call on businesses in Pennsylvania, which was one of the most imaginative things which has come out of this act.

Mr. Moss. Our next witness will be Dr. Donald Marlowe, dean of engineering, Catholic University.

Mr. WATKINS. Mr. Chairman, I want to thank you for letting that stay in the record.

Mr. Moss. I feel kindly toward Pennsylvania. It has supplied us with excellent Californians.

STATEMENT OF WILLIAM D. PATTON, LEGISLATIVE COUNSEL, NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS, ON BEHALF OF DR. DONALD E. MARLOWE, CHAIRMAN, RESEARCH AND DEVELOPMENT COMMITTEE, NSPE

Mr. PATTON. My name is William D. Patton. I am legislative counsel for the National Society of Professional Engineers. Dr. Marlowe is unavoidably detained and cannot be here this morning despite a strong desire to be.

With your permission, I will submit his prepared statement for the record and express his apologies and regrets that he can't be here.

Mr. Moss. Without objection, the statement will be received for the record.

(The statement referred to follows:)

STATEMENT OF DONALD E. MARLOWE, P.E., CHAIRMAN, RESEARCH AND DEVELOPMENT COMMITTEE, NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

Mr. Chairman and members of the Committee, I greatly appreciate this opportunity to present the views of the National Society of Professional Engineers of H.R. 16824, a bill to extend the authorization of appropriations under the State Technical Services Act.

My name is Donald E. Marlowe. I am a registered professional engineer and presently am serving as Chairman of the Research and Development Committee of the National Society of Professional Engineers. By way of further identification, I am Dean of Engineering and Architecture at Catholic University, and also serve as Chairman of the Advisory Committee for the State Technical Services Program in the District of Columbia.

The National Society of Professional Engineers is a nonprofit organization composed of 53 state and territorial professional engineering societies with more than 500 chapters and over 66,000 members, all of whom are qualified under applicable state engineering registration laws. Our membership includes professional engineers engaged in virtually every specialized branch of engineering practice and type of employment—education, private practice, industry and government.

We appear today in support of the State Technical Services Program. We believe the federal assistance provided to the states under the Program is playing an important part in helping to stimulate the efficient use of engineering technology throughout the country, and is highly beneficial to business, industry, and the general public. We urge that the Program be continued.

In 1965 it was our privilege to testify before this distinguished Committee to express our Society's support for establishment of the State Technical Services Program. We thought then that the proposal was an excellent one and would be of great benefit to industry, to the engineering profession, and to society as a whole. We had some concern that certain language in the enabling legislation as originally drafted might be interpreted to set up federally-financed technical services in competition with engineers in private practice, and suggested amendments to avoid this possibility. Administration officials assured us that what was intended was a technical information dissemination program, to help stimulate more efficient use of scientific and engineering information. Congress, in turn, adopted clarifying amendments to assure that the Program would not operate in competition with private consulting engineers.

Because of our strong support for the basic purpose of the State Technical Services Program, coupled with our initial concern that it might provide federally subsidized technical or engineering services in direct competition with private firms or individuals, we have closely observed the development and progress of the Program since its inception. We are happy to report to the Committee that based on our observations we believe the Program is well on its way toward achieving on a continuing basis the purposes set forth in Section 1 of the Act—that is, wider diffusion and more effective application of science and technology in business, commerce, and industry—but without interfering with the privately developed and privately operated technical services provided by consulting engineers.

We are convinced, in fact, that in addition to helping stimulate more efficient use of engineering technology in business and industry, the Program has actually generated increased business for engineers in private practice. We have witnessed a number of cases where increased awareness of technical possibilities by businessmen, apparently as a direct result of the Program, has resulted in their retaining consulting engineers when they probably otherwise would not even have thought of doing so.

In summary, Mr. Chairman, we are convinced that the State Technical Services Program is an excellent one, and is beneficial to the general public, business, industry, and the engineering profession. We believe the Program is operating in the interest of the economic well-being of the nation, and should be continued.

We sincerely appreciate this opportunity to present our views, and will be happy to answer any questions or provide any additional information or comments the Committee may desire.

Mr. PATTON. I would like to make this additional comment. Dr. Marlowe's statement strongly supports the program based on his detailed experience and knowledge of it. He urges its continuation.

Mr. Moss. You express to Dr. Marlowe our regret he could not be here with us.

Mr. Moss. Our next witness is Dr. William Turner, administrative dean, university extension, North Carolina State University.

STATEMENT OF DR. WILLIAM L. TURNER, ADMINISTRATIVE DEAN, UNIVERSITY EXTENSION, NORTH CAROLINA STATE UNIVERSITY, REPRESENTING THE NATIONAL ASSOCIATION OF STATE UNIVERSITIES AND LAND-GRANT COLLEGES

Mr. TURNER. Thank you, Mr. Chairman.

Mr. Chairman, I represent the National Association of State Universities and Land-Grant Colleges.

I am William L. Turner, administrative dean for university extension, North Carolina State University, and a member of the association's committee on industrial extension.

The association for which I speak today has a membership of 99 institutions which grant more than one-fourth of the bachelor's degrees, and award almost 60 percent of the doctoral degrees in the United States.

But far more germane to this hearing is the role that these institutions have had and continue to have in providing broad educational opportunities to the people generally through extension courses and the seminars, conferences, and institutes included in the term "continuing education."

While many public and private institutions of higher education have effective extension or continuing education programs, a major share of work in this field is performed by our institutions.

This could be expected since the mission of our institutions embraces resident instruction, research, and continuing education.

This threefold mission was set forth at the outset in Federal and State statutes and has been enthusiastically accepted and developed by our faculties and administrations for over 100 years.

The Morrill Land-Grant Act, which over a centrury ago prompted the founding of many of our institutions, stated as part of its purpose, "In order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life," and it is this practical education which has been a prime concern of our extension and continuing education programs.

Two specific areas of educational concern were explicitly stated in the Morrill Act, that is, "agriculture" and "mechanic arts."

In the field of agriculture, these institutions have been centers of innovation and scientific development which have contributed dramatically to an increase of many fold in the Nation's productivity of food and fiber. These results are so impressive that the procedures by which they have been accomplished merit a brief description, even at the risk of reciting the obvious.

In summary, resident instruction provided the educational opportunity to develop qualified research workers in the agricultural sciences.

Then, through the activities of agricultural experiment stations established at the land-grant institutions, many of these research workers addressed themselves to the complex questions of improving both the quality and the yield of agricultural products.

Finally, the cooperative agricultural extension program provided the workers, supported by local, State, and Federal funds, who undertook the help the farmer to apply in his daily activities, the advances in knowledge the techniques resulting from the research done at the experiment stations.

In the light of the fact that the original Morrill Act of 1862 specifically identified "the mechanic arts" as an area of concern parallel to that of agriculture, it is not surprising that there has been a long history of interest and activity at land-grant institutions in today's "mechanic arts," that is, engineering and technology.

Until the enactment of the State Technical Services Act, this activity provided only limited opportunity to small business and manufacturing concerns for communication and participation in new developments along the lines that the cooperative extension services had provided and had proved to be so effective in agriculture.

Most of our institutions have gone to strong public service programs which usually take the form of continuing education courses and problem solving units.

All of our institutions have programs with business and industry; but because of limited institutional funds in many institutions, extension work with businessmen and industrialists usually has had to be largely self-supporting, with the cost being paid by fees for the service.

While the participants in these programs have undeniably benefited, they also have tended to come from those organizations which are large, progressive, and prosperous.

From the standpoint of society, this group of individuals needs continuing education less than a very large number of smaller business and manufacturing firms who generally have not participated because of a lack of money to do so.

The existing programs are based on willingness and ability to pay for continuing education and have tended to curtail the contribution to greater productivity which the many smaller concerns might have made if they had had access to technical knowledge relevant to their needs and problems.

While a few universities have received substantial support from State government for such extension work, this has almost invariably resulted from vigorous efforts by enlightened and influential businessmen at the State level.

These instances were used as illustrations of what could be done in testimony which was presented when the act was first being considered by the Congress.

The State Technical Services Act, new and funded at a low level, has already begun to help business and industry in many other States to achieve the same sort of results.

A number of studies have been made on encouraging innovation and the utilization of new technological ideas, all of which show that

the pattern of putting knowledge to work is the same in agriculture, business, manufacturing, education, and all other fields.

Generally there is a small percentage of decisionmaking units which consciously seeks out new developments and find ways to apply them to the improvement of current practices.

But a very determined and conscious educational effort must be made to get the majority of the decisionmaking units to become acquainted with new methods, ideas, and processes and to put them into operation.

It is precisely through the service which the State Technical Services Act provides that this effort can be made most effectively.

From the standpoint of the national interest, reasons for the act which were considered and endorsed by the Congress 3 years ago when first considered, are more cogent today for the simple reason that experience has proved them to be sound.

State Technical Services programs have been in operation only 2 years and at a low level of funding, yet many useful results are already evident.

Many examples of these results could be supplied, and it is evident that the cost-benefit ratios are decidedly favorable. However, since the educational programs are essentially long-range in nature, even better results are to be expected in the years ahead.

The program has brought about significant and beneficial changes within the universities. A survey of our member institutions indicated that most of our members have enthusiastically accepted the commitment implied in the State Technical Services Act.

Overall, the survey showed that:

(1) There has been a substantial increase in continuing education activities with business and industry.

(2) There has been much innovation exemplified by universities employing field service personnel for reaching the hard to reach and establishing central reference systems and information programs which provide new information through systems which previously could not have been afforded.

(3) There has been a heartening increase in cooperation between public institutions and private institutions.

(4) There has been increased productivity, communication, and partnership between State governments and universities. As one notable result, the requirement of State or private matching funds has not proved to be a major problem.

(5) There has been the recognition by universities that successful prosecution of this program requires a team of specialists representing a number of disciplines. Universities have been able to mount such teams and report a valuable carryover of the team effort into other fields as well as back into the classrooms on campus. The program has resulted in increased capabilities and motivation of universities to assist business and industry much greater than one could reasonably expect from the investment of the modest amount of funds that have been available.

One new development in the State Technical Services program which I believe deserves special mention has taken place in New England.

In this case, a regional approach to State Technical Services has occurred similar to that which I understand was proposed when the Congress first considered the legislation.

With the support of the New England Governor's Conference, and after 2 years of dedicated effort by many individuals, the New England Technical Services Board has been organized and on February 27 of this year transmitted to the Department of Commerce its first regional program.

As was stated by the chairman of the board, Mr. Erskine N. White, Jr., executive vice president of Gorham, a recently acquired division of Textron, in his presentation to the public evaluation committee in Wilkes-Barre, Pa., "Let us acknowledge that there were not only complications, but readymade obstacles to the regional idea.

"We needed the positive direction—and later the support, the understanding, and the patience—of our Governors."

Yet the problems were solved and the obstacles were overcome with the result that the regional plan is in operation with financial support provided by specifically approved funds from each of six separate States.

The necessity for such a complicated procedure for funding arises from the fact that, quoting Mr. White:

> Presently six separate contracts are required to fund or commit for our regional effort.
>
> With the help of the State Technical Services office in Washington—and with your help if legislative revision be required—we look to the time when the regional mechanism may itself be designated and authorized to act on behalf of the region—perhaps initially as a seventh agency in the six-State area, but with longer range though less precise vision, perhaps as the agency within the region.

The enthusiasm and sense of commitment to the regional idea by all of those who have been involved in this effort testifies to the importance of this pioneering effort.

Questions have been raised by a few as to why the universities should be involved in a program such as State Technical Services.

Why should the activities not be conducted directly by a Federal agency or by private associations?

The clear answer is that universities approach their clients with objectivity and with no material benefit to gain.

Further, they know educational techniques and have resources in specialists in many professional and academic fields, strong libraries, versatile computers, and well-equipped laboratories.

These can be drawn upon as needed for special assignments with a particular business or industry. It would be extremely costly, and certainly uneconomic, for any agency to try to duplicate this reservoir of capability and talents.

While our association strongly favors the State Technical Services Act, we would urge amendments to the proposed extension. First, we feel that the act should be extended for an indefinite period and at the very least for 5 years.

A long-range commitment is needed to enable universities to "tool up"—establish the basic staffing and programing—to perform the job at the level needed and to provide the consistent followthrough which is essential to enduring effectiveness.

Secondly, we would propose a funding authorization of $18 million for fiscal year 1969; $30 million for fiscal year 1970; and $42 million for fiscal year 1971 and succeeding years.

I would like to leave my statement for just a minute to give you a case example of my own State, the State of North Carolina. Two years ago, at the beginning of this program, the State of North Carolina made State appropriations available for this program this current year and the year coming up.

We are overmatched on Federal funds and I have to go to the general assembly within the next 3 months—the budget is already prepared—for another program and another review.

My case is going to be a little bit weaker this time, gentlemen, because we don't have sufficient Federal funds to match with it.

So, I want to give you a case example of what can happen at the State level unless sufficient Federal funds for matching these programs are provided.

A State can lose interest and universities can lose interest and talent and capability for conducting a program at an effective level.

These figures that I have just mentioned on funding authorizations are not drawn out of the air; they are based upon careful and extensive study on what is needed to do the job and upon the rate at which capabilities can be developed.

Also, at the time our association testified on behalf of the State Technical Services Act 3 years ago, it was with strong conviction that the act should provide not only for the dissemination of technological developments but also should make possible similar programs dealing with the science of management.

We believe the act permits this interpretation, but in order to clarify the point, we would urge that the Congress, without amending the act, would state its "sense" that the managerial sciences are included within the scope of the program.

This is critical because it is management which must make the decisions which bring about the adoption of new technology and application of new technological developments.

Therefore, it seems to us to be altogether logical that the program should be concerned as well with the processes of management as with the technology with which management has to deal.

If the Congress, however, feels that clarification requires amendment to establish this end, we would support this action.

Finally, and especially in view of the New England experience with a regional approach as cited above, we urge that the legislation be amended specifically to authorize increased and more direct funding for regional programs.

This may be accomplished through additional special-merit funding or through increased Federal support of regional programs with more than 50 percent matching as an incentive to regionalism.

In any event, we recommend strongly that it may be made possible for regional arrangements to be funded directly, subject only to the approval of the several State agencies participating in the regional plan.

We thank you for the privilege of appearing before you today. We feel that the accomplishments and effects of the State Technical Services Act have been most encouraging. We are ready and eager to continue; we respectfully ask that you make it possible for us to do so.

Mr. Moss. Thank you, Dr. Turner.

I wonder if you would supply the committee with the backup data used in reaching the conclusions contained in the last paragraph on page 7 of your statement:

> These figures are not drawn out of the air, they are based upon careful and extensive study on what is needed to do the job and upon the rate at which capabilities can be developed.

I think the detailed information would be helpful although I would not want to leave you with a feeling that the possibility of reaching that level of authorization is too strong in view of the situation confronting the Congress at this time, as I would not want to encourage you to believe that 5-year funding authorization is possible.

The Commerce Committee has adhered rigidly to the 3 years in order that we have the opportunity to review the programs, to evaluate them, before extending them.

Thank you.

(The information requested was subsequently submitted in the following letter:)

COOPERATIVE EXTENSION SERVICE, UNIVERSITY OF MISSOURI,
Columbia, Mo., June 24, 1968.

Hon. JOHN E. MOSS,
Chairman, Subcommittee on Commerce and Finance, House of Representatives, Washington, D.C.

DEAR CONGRESSMAN MOSS: Dr. W. L. Turner who presented testimony for the National Association of State Universities and Land-Grant Colleges on behalf of the State Technical Services Act informs me that you wanted the basis of our recommendation on the funding level needed for the State Technical Services Act. I am happy to do this. Incidentally, I serve as Chairman of the Association's Committee on Industrial Extension; but a special session of our State Legislature made it impossible for me to be present for this hearing.

Considerable study was made to arrive at a proposed future funding level of 42 million dollars of federal funds. Two approaches were used.

The first was simply an extrapolation from Missouri. We have been concerned with and had underway some work with transfer of technology to business and industry before the passage of the State Technical Services Act. We have, with the help of industry, studied over a period of years resources needed to do the job on a minimum adequate basis. We figure as a maximum we will need 24 professional staff members serving as a field staff. These people serve as the primary and direct contact with business and industry. A central reference service is also essential and this will require a professional staff of at least six persons. Much of the actual teaching and responding to requests from the central reference center and field staff must be handled by highly trained faculty members or their counterparts in not-for-profit corporations. We estimate that it will require the equivalent of 34 persons to handle this phase. There will be many more individuals involved because most will be used on a part-time basis for this program; but the full time equivalent will be 34. These high level faculty members along with support personnel and the necessary educational hardware will require an annual budget of 1.6 million dollars at present cost levels for the state of Missouri.

Missouri is about an average state by every measure. We have about 2 percent of the population, space, business and industry, income, etc. Multiplying the 1.6 million by 50; and allowing for a modest amount for administration at the federal level, and assuming the Federal share will be half, we arrived at the 42 million figure. The graduation from 18 million in fiscal '69 to 30 million in fiscal '70 to 42 million in '71 represents our estimate of the speed at which the program can grow.

Dean Easton of Colorado, a member of my committee, worked with several members of our committee and used a completely different approach. A sample of states were contacted and asked to provide long range staffing and program needs to carry out the objectives of the State Technical Services Act. This study revealed the need for 500 field staff and 1000 faculty types. Those with associated

support staff and necessary expense and equipment would cost at present price levels $37,500,000. If the present ratio is maintained between field staff and instruction (This handled by above mentioned personnel.) and central reference and referral services, a total of $18,750,000 would be required for referral and reference services. This total includes personnel plus the cost of educational and communications hardware. We see no reason why the assumption of maintaining the same ratio is not a good one.

The sum of the above items is $56,250,000. To this was added 25 percent to cover indirect costs of the universities which brings the total cost of institutional programs to $70,312,000. This makes a federal share of $35,156,000. It was estimated that an additional $12,000,000 federal funds would be required for administration and special merit programs making a grand total of federal funds of $47,156,000.

After examining the details, the committee decided that extrapolation from the Missouri model probably presented a more accurate picture, since much study over a number of years had gone into the model, although the Missouri model may be light on federal funds for administration and special merit programs. At any rate we decided to go with the Missouri model.

If you have additional questions, please call me collect. We appreciate your interest.

Yours very truly,

C. B. RATCHFORD,

Vice-President of University of Missouri for Extension; Chairman, Legislative Sub-Committee on Industrial Extension, Association of State Universities and Land-Grant Colleges.

Mr. Moss. Mr. Keith.

Mr. KEITH. I have no questions, Mr. Chairman.

Mr. Moss. Mr. Watkins.

Mr. WATKINS. Thank you, Mr. Chairman.

I want to thank the doctor for very helpful testimony. It is a subject I am most interested in. I want to say this: I like the program. I am going to support your program.

But I think the money amount is way out of line. If it is not too much work, I would like to see your breakdown. That might give us a good argument.

When you ask for more, sometimes we have a chance of getting less. That is all.

Mr. Moss. Thank you.

Mr. TURNER. Thank you very much.

Mr. Moss. Our next witness is Dr. LeRoy Marlow, director, Pennsylvania Technical Assistance Program, Penn State University.

I am going to take advantage of my role as chairman and say, before my good friend Mr. Watkins can, that I have visited your institution and regard it as an excellent one.

STATEMENT OF H. LeROY MARLOW, DIRECTOR, PENNSYLVANIA TECHNICAL ASSISTANCE PROGRAM, PENN STATE UNIVERSITY, UNIVERSITY PARK, PA.

Mr. MARLOW. Thank you, sir.

Mr. WATKINS. I thank the chairman. I am so proud you did such a good job with my grandson there. He is turning out to be a very useful citizen.

Mr. MARLOW. Mr. Chairman, I have a prepared statement. In the interest of time, if I may, I will not read this. I will excerpt a couple of items.

Mr. Moss. The statement will be received and included in its entirety in the record at this point.

You may summarize.
(The statement referred to follows:)

STATEMENT OF H. LEROY MARLOW, DIRECTOR, PENNSYLVANIA TECHNICAL ASSISTANCE PROGRAM (PENNTAP)

Mr. Chairman and members of the Committee: I am H. LeRoy Marlow, Director of PENNTAP, the Pennsylvania Technical Assistance Program. I wish to thank the Committee for the privilege of testifying on H.R. 16824, the bill which would extend the authorization of appropriations under the State Technical Services Act through June 30, 1969.

PENNTAP, the Pennsylvania Technical Assistance Program, was organized as a result of the federal State Technical Services Act of 1965. Its purpose is to disseminate the latest technological information to business, commerce, and industry in the Commonwealth of Pennsylvania.

In June, 1965, the Governor of Pennsylvania selected The Pennsylvania State University as the designated agency for the Commonwealth. Then, the Executive Committee of the Board of Trustees of the University approved the establishment of the Pennsylvania Technical Assistance Program at the University.

Responsibility for PENNTAP was given to the Continuing Education division of the University. This provides closer coordination of the University-based, non-instructional services designed to assist business, industry, government, and other organized groups. Such coordination helps to assure maximum use of the University's resources.

The PENNTAP Director, who is responsible for the program, reports through the Director of continuing Education to the President of The Pennsylvania State University. The organizational structure is illustrated in Figure 1.

To fulfill the requirements of the Act, an Advisory Council was appointed by the Designated Agency. The Council, whose membership represents broad community interests, evaluates the annual State program and acts in an advisory capacity to the PENNTAP Director.

Qualified institutions of higher learning in Pennsylvania—colleges, universities, private non-profit institutions, and appropriate government agencies—are invited annually to submit proposals of technical assistance projects. PENNTAP then contracts with the proposers of approved projects to carry out the technical services.

Before the State Technical Services Act, numerous public and private institutions provided a full complement of services to business and industry in the Commonwealth. For example, The Pennsylvania State University, the University of Pittsburgh, and Temple University have contributed continuing education programs covering the complete technical spectrum. The Mellon Institute (now a part of Carnegie-Mellon University) offered its famous technical symposia and industrial fellowship program. In Philadelphia, the Franklin Institute has long served industry through research, development, and information services.

However, even with such highly qualified institutions and organizations serving the Commonwealth, there was little collective effort. Interrelation of these technical assistance media had never been attempted. In addition, the numerous federal programs operating within Pennsylvania had not been coordinated.

The most important feature of PENNTAP is that it provides for an effective, unified system of information transfer. The STS Act stimulates an industrial assistance venture that probably would never have otherwise happened. In all probability, there would have been no coordinated attack on the overall needs of this Commonwealth nor the needs of the other states. And furthermore, there would not have been the coordination of competent teams of technical experts to "tackle" these needs.

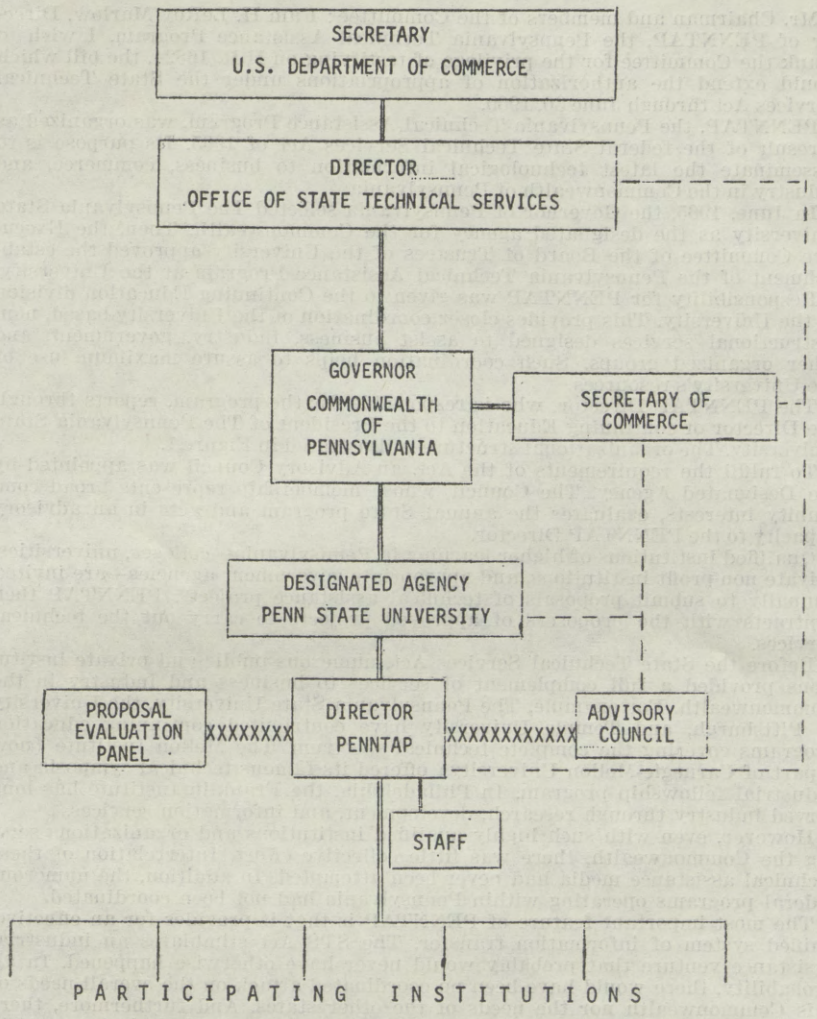
The STSA has provided the opportunity to unite the technical interests, capabilities, and services which exist in each state. PENNTAP is demonstrating, in Pennsylvania, that a statewide technical communication system is possible if existing services are expanded and new ones are derived.

The primary purpose of PENNTAP—and STSA—is to facilitate the acquisition and use of the lasest scientific and engineering information by business, commerce, and industry. In Pennsylvania, such technical assistance is essential to the development of industrial potential, economic growth, employment opportunities, and higher technological levels.

Figure 1

PENNSYLVANIA

PENNTAP ORGANIZATION CHART



More specific PENNTAP goals are:

Establishment of a statewide communications system;

Technical services in at least five main areas such as materials, computer applications, bioscience, transportation, and oceanography;

Involvement of 18 institutions of higher learning;

Service to all principal industrial centers within the Commonwealth;

Participation by technical and administrative personnel from industries of all sizes; and

Development of an interstate communications system.

So far, most of the other states are emphasizing a variety of continuing education courses and seminars on many different subjects. Generally, these reflect the specialty of the participating institution. Pennsylvania, however, is approaching the needs of the Commonwealth on a very methodical, careful basis. Emphasis is placed on specific fields of endeavor.

Steps were taken as early as 1963 to lay these technical foundations for developing science and technology in Pennsylvania. At that time, the Governor appointed a Council of Science and Technology to study the needs of the Commonwealth and to develop programs "to accelerate the growth in Pennslyvania of the new science-oriented industries." A subcommittee of this Council identified specific technical areas having the greatest potential for exploitation in Pennsylvania. It was only natural for PENNTAP, when it made its advent in 1965, to incorporate these priorities into its Plan.

In addition, each year prior to solicitation of proposals, the PENNTAP Director and the Advisory Council meet with Pennsylvania's Secretary of Commerce to explore current needs and determine areas of immediate priority. Close liaison is maintained, too, with the Governor's Science Advisory Committee which is keenly aware of the technical needs of business, industry, and the Commonwealth.

Since Pennsylvania has a wealth of public and private institutions which have vast experience in providing service to business and industry, PENNTAP uses these resources for carrying out the STSA. Each year, after the priority areas have been established, the more than 100 potentially qualified institutions in the Commonwealth are invited to submit proposals of specific information dissemination projects.

To encourage institutions and to aid them in preparing their proposals, a "Proposal Guide," establishing format and desired information, was published for the institutions' reference. (Pennsylvania is the only state known to assist the qualified institutions with such a publication.) Advisory services of the PENNTAP staff are also available to the institutions, at their request, to assist in the preparation of proposals.

Each year since the inception of the Act, Pennsylvania has conducted an active, statewide program of technical assistance for its business and industry. Currently, our third consecutive STS annual program is operating, and our fourth-year (1969) program is being formulated.

In addition to the accomplishments previously reported to the Office of State Technical Services, PENNTAP has been the stimulus for making possible other activities including:

1. Initiation, at Bucknell University, of a seminar on warm air heating. Additional technical seminars for industry which will operate without PENNTAP financial support are planned.

2. Expansion of "The Sound of Progress," a radio broadcast program, to include the dissemination of not only technical information, but also other data having economic impact. This project, conducted by The Pennsylvania State University is now operating without PENNTAP funds. Two states, Delaware and New Jersey, have requested that "The Sound of Progress" program be expanded to include the tri-state area. Representatives of the three agencies are pursuing this idea.

3. Development, at Drexel Institute of Technology (one of the institutions participating in the MAP Coupling Program), of a short course on "Design with Composite Materials."

4. Development of preliminary plans for establishing a nationwide "Powder Metallurgy Technical Information Clearinghouse" at the Franklin Institute. This Clearinghouse would offer services expanded from the base program begun through PENNTAP.

PENNTAP, to date, has solicited proposals for four program years: 1966–1969. A total of 92 proposals have been received from 18 institutions. Of these, 36 have been selected for inclusion in the Annual Programs.

In the area of proposal evaluation, Pennsylvania is unique in that it has a separate, impartial Evaluation Panel to review the project proposals. The Panel, acting in an advisory capacity to the PENNTAP Director, evaluates and suggests

the projects for inclusion in the Annual Program. The seven Panel members, none of whom are associated with any of the participating institutions, are primarily from business and industry.

In choosing the projects to implement STSA in Pennsylvania, emphasis is placed on uniqueness, practicality, and projected significance. While all PENNTAP projects reflect this, three are particularly outstanding.

The Library Information System, established by The Pennsylvania State University, provides organized technical information to industry in response to industrial inquiries. An industrialist from any secton of the Commonwealth can submit specific technical questions to the System. After a search of the literature is made, the pertinent data is sent to the inquirer. By using the facilities of the University's 20 Commonwealth Campuses and Centers, the Library Information System is easily accessible to business and industry in every section of Pennsylvania. Another unique feature is that this project deals with the specific problems and needs of industry as defined and requested by the industrialists themselves.

Another library project, conducted by the Carnegie Library of Pittsburgh, is an interesting and novel venture: a mobile science-technology library. This is the only known mobile library serving the scientific and technical needs of American enterprise. This specially-constructed van is stocked with the latest scientific and reference materials of interest to industry. As the van travels through western and central Pennsylvania, the library staff conducts seminars at plant locations and shows industrialists how to cut through the unfamiliar maze of library procedures to obtain information. The van, valued at $25,000, was purchased under the provisions of the Library Services and Construction Act, and has been made available—without cost—to PENNTAP.

The third distinctive project couples the expertise of six major Pennsylvania universities with ten industrial scientists in providing a series of seminars on materials technology. This cooperative effort of academic and industrial personnel is, in itself, unique; that it is producing an effective program for industry is even more significant.

In addition to these three programs, PENNTAP offers in-depth library services for industries using metal plating and coating, powder metallurgy, and carbon-graphite technologies. Seminars on color measurement, materials technology, textiles, and computer applications in small industry are being conducted. Radio, television, and films are also being tested as media of information transfer.

Many meritorious projects have been proposed for PENNTAP's 1969 Annual Program. However, the number of good, active projects which can be undertaken will depend solely upon the availability of funds.

Initial evaluation indicates that PENNTAP is a promising venture with great potential. However, it is almost impossible to evaluate a program of this type in the same calendar year in which its activity is approved for funding. A few action projects in the program may give preliminary indications of success, but there must be an elapsed amount of time between the completion of a project and its true economic evaluation. Since PENNTAP is the sum of its individual projects, it cannot be evaluated accurately until its projects are measured.

Moreover, since industrial application of technical information generally requires much time, thought should be given to delaying the evaluation of projects. Perhaps even funding—up to, say, 5% of the total project budget—should be included in the initial project cost for this delayed evaluation. Thus, a more accurate evaluation would be made possible.

Even though a true evaluation of PENNTAP and its projects cannot be made at this early date, there have been numerous successes—in both numbers using the services and industrial application of information. These have been reported to the Office of State Technical Services in the Annual Reports and through more informal means.

The Designated Agency of the Commonwealth of Pennsylvania received, in late 1965, a planning grant of $25,000 to organize PENNTAP and to prepare the *Five-Year Plan* and the first Annual Program (1966). An accounting of this money was submitted in the 1966 Annual Report. This second planning grant has just been approved and will be used to evaluate present activities and to determine potential areas of service.

In addition, PENNTAP has received approval of three annual program grants, all of which were on a matching fund basis. To date, approved program appropriations from both the Federal and the Commonwealth Departments of Commerce amount to nearly a million dollars. Of this amount, $476,399 has come from the Federal government; $500,000 has been from the Commonwealth; and approximately $25,000 from private sources.

Beginning in 1969, there will be an increasing amount of non-government funds in the total PENNTAP budget. First, a total of $62,465 in industrial or participating institution support has already been included in the budgets of the projects proposed for that Program. Secondly, PENNTAP has begun in its current program to collect fees and contributions which are being held in escrow for use in the 1969 Program. To present knowledge, Pennsylvania is the only state holding funds in escrow for use in succeeding annual programs.

The current PENNTAP philosophy is to use the federal and state tax dollars as "seed money." The idea is for PENNTAP to initiate the projects which, in turn, will become self-supporting as soon as possible.

This "seed money" idea does not mean that federal funds should be eliminated. It would be disasterous to the initiation of new projects to eliminate these federal funds. PENNTAP's successes have resulted from federal support of the original projects. The successful programs would probably continue if federal funds were eliminated, but the initiation of new projects which would lead to other successes, would not be possible.

Also, it would be short-sighted to think that there will be a day when federal support of the program will be completely withdrawn. For example, the library information programs offer an industrial service very similar to that given by the agricultural agent. While some industrial support for many of these programs will be forthcoming, it is unrealistic to believe that such services will ever be entirely self-supporting. Information programs presently striving to be self-supporting through industrial contributions are finding it very difficult.

If the State Technical Services Act is to reach its greatest potential, consideration must be given to longer-range funding. This would give assurance to project personnel that the project, if successful, could continue for more than 12 months. It should be remembered that it is extremely difficult to hire a competent industrial librarian under the conditions of the present grant system.

We, in Pennsylvania, are currently preparing to submit our fourth annual program. This does not mean that we have three years of experience behind us. In reality, PENNTAP is only 22 months old as the first contracts with participating institutions were signed August 1, 1966. Allowing for the transition from "paper" projects to operational ones, most of the first-year projects did not become functional until January, 1967. This means that while we have had some measurable successes, evaluation of the total effort at this time is unrealistic and not truly indicative.

It is interesting to note that, to date, PENNTAP has been able to direct 91.7% of all project dollars towards actual dissemination of technical information. Only 8.3% of the budget has been used for total administration of the program. This administration figure includes the costs incurred by the Advisory Council and the Evaluation Panel, as well as such items as supervision, printing, travel, and coordination of the participating institutions. This figure does not include the cost of such services as accounting and contracting which have been donated by The Pennsylvania State University as the Designated Agency.

As stated before, the STSA is a very promising venture. It can provide a significant stimulus to economic and technological growth. However, there are problem areas whose resolution could result in an improved, more meaningful State Technical Services Act.

In addition to the previously suggested recommendation (longer-range funding), the following warrant consideration:

1. The Office of State Technical Services, the Commonwealth of Pennsylvania, and the Designated Agency must find ways of reducing the long delay between submission of proposals by participating institutions and actual funding and initiation of the projects. The existing lag time discourages some of the more qualified academic personnel from submitting proposals because they are reluctant to commit themselves for such a long period of time in advance. This delay also constitutes a morale factor: proposals are accepted but starting dates cannot be guaranteed.

2. Evaluation is a continuing problem to which there is no easy answer. To achieve a true evaluation of a project, there should be an elapsed amount of time between the completion of the project and its evaluation. It is not only unrealistic, but also impossible, to evaluate a state program in the same calendar year in which its program activity is approved for funding.

The question of how much the experimental phase of STSA should influence evaluation needs to be resolved. If the programs are to be truly experimental in nature, inclusion of unique projects might also adversely affect the chances for a proven success or a positive evaluation.

3. The State Designated Agency needs more flexibility in administering approved projects. The Office of State Technical Services has every right to, and indeed should, hold the Designated Agency accountable for performing the program as approved. However, the excess amount of administration now required—such as control of individual budget line items—causes additional paper work, a time delay, and uses effort that could be spent on more productive pursuits.

4. The STSA was designed as a federal-state partnership; however, to date, the administrative procedures have been imposed rather than developed jointly. In many cases, these have not helped the states in their fostering of the Act. It would be helpful, and the needs of the individual states could be met more fully, if there would be a genuine movement towards a federal-state partnership. The use of the task force idea has been a step in that direction.

5. The Office of State Technical Services should consider using punchcard forms for receiving rate-use and other data. Key-punched cards could speed statistical reporting of program results at both state and federal levels.

In summary, there is an active program in Pennsylvania operating under the State Technical Services Act. Numerous projects of interest and benefit to business and industry are being conducted by various qualified institutions under the auspices of PENNTAP. However, if this service to the business and industrial community is to be continued and/or expanded, financial support from the federal government is necessary.

Mr. MARLOW. Penntap is an abbreviation for the Pennsylvania technical assistance program set up in Pennsylvania to administer the State Technical Services Act.

The Penn State University requested the Government to administer a statewide program. We have some 120 institutions in the State that we contact each year. Approximately now we have 12 institutions of higher learning, Government agencies, and independent laboratories working to disseminate technical information within the State of Pennsylvania.

We are pretty happy with our early results. Our plea would have to be that in the 22 months that we have been operating things are starting to roll. We are able to get our message out now to industry. They are starting to understand what Penntap is.

If we were to stop now or greatly curtail our program now the effort at this point would be lost.

We are able to show at this point successes like Mr. Reilly mentioned today, we are starting to put dollars and cents successes on some of our programs.

We have several dissemination activities that were initiated under the State Technical Services Act that are now going on their own without any State or Federal support.

This, we believe, is the direction it should go. We should like to see the appropriations used to start, to initiate programs and then have them become self-supporting as quickly as possible.

However, at the same time, there are certain kinds of programs like our library commission and reference programs that I don't think will ever be completely self-supporting.

So, an analogy might be drawn to a county agent who helps the farmer with new seed and moves along with it, has had continued Government support.

First, the continuing Federal support will allow us to initiate programs without whose help the programs would never be initiated and; secondly, to provide some continuing support for those activities that because of the nature of them could not become self-supporting.

If the State Technical Services Act is to reach its greatest potential we must have consideration for more than year-to-year funding.

My problem now is with personnel. The kinds of people we want in the program, the kinds of people we have been able to get in the program are not people you pick up on the corner.

These folks don't want to work on a program when they don't know from 1 month to the next if they can continue.

They would rather spend effort on some programs that give them continuity. Where success occurs, they have some assurance it will be continued.

My plea would be for this kind of continuation to the extent possible so that we can attract and keep the level of personnel that we have here.

At this point, I think that I want to say that the potential is incalculable. We are just starting to scratch the surface. We have indications that are extremely good. Support is picking up.

The Penntap people seem to know what we are talking about. If this service to business or industry is to reach the potential that is possible and if it is to be continued and expanded, we need to have continued Federal support.

Mr. Moss. Thank you, Mr. Marlow, for an excellent summation.

Mr. Watkins?

Mr. WATKINS. I thank Dr. Marlow for appearing. I am sure that every consideration will be given to this program. I shall use my individual efforts to keep it going and strive to get as much money as possible under the conditions existing today.

Mr. MARLOW. Thank you, sir.

Mr. Moss. Mr. Keith?

Mr. KEITH. I have no questions, Mr. Chairman.

Mr. Moss. Doctor, I want to thank you also for taking your time in coming here and giving this committee the benefit of your evaluation of the program, the experience of Penntap in your State.

Mr. MARLOW. Thank you, sir.

Mr. Moss. With that, unless there are further questions, the committee will stand in adjournment.

(Whereupon, at 11:50 a.m., the subcommittee adjourned, subject to call of the Chair.)

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