Integration of TVA and Valley State Planning Board Programs in Regional Resource Development

John A. Parker

September, 1946
501 New Sprankle Building  
Knoxville, Tennessee  
September 6, 1946

Dear Professor Adams:

In partial fulfillment of the degree of Master of Regional Planning, I submit this thesis entitled "Integration of TVA and Valley State Planning Board Programs in Regional Resource Development."

Respectfully yours,

Signature redacted

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JAP rb

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FOREWORD

The Tennessee Valley Authority and the state planning agencies in the Tennessee Valley states are actively engaged in resource development in the Tennessee Valley region. The purpose of this report is to explore the activities of these agencies in this field, to determine the means by which their work has been integrated, and to suggest a method by which more effective integration might be brought about.

In the process of carrying out this study, published and unpublished reports were reviewed, and representatives of TVA and state planning boards were consulted. The results of these investigations were appraised and a suggested organization developed for bringing about closer integration between the state agencies and TVA.

The author wishes to acknowledge his indebtedness to those who have given generously of their time in discussing the work of TVA and the state planning agencies. I am especially indebted to Aelred J. Gray, Chief of the Urban Community Relations Staff of the Department of Regional Studies, Tennessee Valley Authority, whose valuable suggestions have been incorporated throughout.

J.A.P.

Knoxville, Tennessee
September 6, 1946
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The Early Policies

Washington and Jefferson were the first of our conservationists. They were good farmers, and checked soil erosion on their own farms by continuous plowing. John Quincy Adams, Major John Powell, Clarence King and Abram Hewitt raised their voices with appeals for land policies based on scientific knowledge, but little attention was paid to their pleas.

In 1873 the American Association for the Advancement of Science protested against forest waste and in 1891 the Forest Reserve Act was passed, providing a basis for a forest conservation program, and setting aside part of the public domain as a permanent national forest reserve.

Meanwhile the Hatch Act (1887) had established federally financed state agricultural experiment stations for research on agricultural problems, and at about the same time the Irrigation Division of the Geological Survey began to withdraw reservoir sites on the public domain from the open market.

By 1900 land had ceased to be free. Oil and coal did not look so inexhaustible as they once had, and forests
were beginning to be looked upon as assets. The Department of Agriculture, the land grant colleges, the Geological Survey and the Bureau of Reclamation were gradually evolving methods to promote a more intelligent use of natural resources.

The Conservation Movement

Theodore Roosevelt and Gifford Pinchot formally opened the conservation movement in 1905 by establishing the United States Forest Service, responsible for the protection and development of forestry on the forest reserve. Two years later, Roosevelt appointed the Inland Waterways Commission, and in 1908 he called the famous White House Conference, from which the National Conservation Commission was appointed to conduct an inventory of the country's resources.

In spite of its sentimental approach, and its lack of scientific information which resulted in over exaggerated forecasts of the rate of resource exhaustion, Roosevelt and his supporters made progress. One hundred and forty-eight million acres were withdrawn from the public domain and converted to the federal forest reserve. One-and-a-half million acres on twenty-seven rivers were withdrawn as power sites. Five million acres of forest lands in Idaho, Wyoming, and Montana were set aside as permanent national property.
In subsequent administrations, five million acres of oil lands were withdrawn from private entry. Congress provided, in 1920 that no government lands containing coal, petroleum, gas, shale, phosphate, or sodium should ever be sold, although they might be leased. By 1930 state forests totaled eleven million acres.

Theodore Roosevelt's strong leadership was directly responsible for the significant accomplishments of the conservation movement. But the concept of endless supplies was still prevalent among the people of the country. Something more exciting than conservation was needed to fire the imagination and to enlist public support. Within a few years, another Roosevelt was destined to take over the movement and carry the plans of the conservationists into action.

Resource Utilization

The shift from conservation of resources to the concept of development of resources for use came about shortly after the 1929 economic collapse. Saving and protection gave way to planning for wise utilization, and experimentation on methods of production, processing and marketing. The new program incorporated all the principles of conservation, but carried them further.

Franklin D. Roosevelt was responsible for the new trend in conservation and came into the presidency at a
time when new ideas were being eagerly seized upon by a bewildered and discouraged people. Roosevelt accomplished more in the name of "conservation" in three years than had been achieved during the past thirty years.

In 1932 the stage was set for action: blighted areas were crying for attention; falling farm prices produced federal action which called attention to problems of agriculture and soil; projects had to be devised, overnight, to absorb vast numbers of unemployed; dust storms and floods helped to dramatize the need for federal action on soil conservation and flood control.

Here was conservation's great opportunity. This time in terms of a broad scale program in resource development. On the one hand were a wealth of resources, many misused and more unused. And on the other hand was man power, a new president, keenly interested in resource development, and a people demanding relief from unemployment.

The results are spectacular. From 1933 on there were hundreds of acts of congress and executive orders bearing on resource development.

The acts provided relief for unemployment through useful public works, including forestation, prevention of flood and soil erosion, and forest research; created TVA and NIRA; established fish and game sanctuaries in national forests; provided relief appropriations for such projects
as rural rehabilitation, water conservation, CCC camps, soil erosion work, stream pollution investigation, reforestation, and flood control; and called for the conservation of petroleum deposits, and the conservation of all minerals on the public domain. This list gives samples of their accomplishments.

The executive orders, to mention only a few, allocated funds for the purchase of public parks, forest reserves, and lands in connection with Bonneville and Fort Peck Dams; authorized the Federal Power Commission to make an extensive water-power survey; and created the National Resources Board.

Progress in resource development has been spectacular, and especially so in the operations of the Tennessee Valley Authority which is blazing new trails in building a strong and independent region in what was, prior to 1933, an area of undeveloped and misused resources.

Theodore Roosevelt's conservation movement was a necessary prerequisite to this unique undertaking which is showing what men and science and wise administration applied to the resources of water, land, forests and minerals can do to benefit the people of a region.
TVA'S METHOD OF RESOURCE DEVELOPMENT

The Unified Approach

The TVA Act specified that the resources of the Valley were to be developed as a unified whole by one agency. This was a distinct departure from existing methods, where the separate centralized federal agencies divided this responsibility. This point of view was to have far-reaching effects in many fields of activity.

During the past generation, administrators have been increasingly aware of the evils of over specialization. Our complex society has demanded competent technicians in many different fields—and has been prepared to pay them well for their specialized services. Schools and colleges were swept along with the current and shaped their curricula around the needs of business and industry, from which many of them derived support. The liberal arts were patronized by those who could afford them, but the great demand was for vocational, technical, and professional education. Most technical schools required some basic training in liberal arts subjects, but these requirements became less important, as professional courses demanded more time.

As a result, the specialists became even more specialized as the liberalized aspects of their training
were squeezed out. Even courses in related fields were dropped in the drive to teach the specialist how to become more efficient in his field of concentration.

The result was that the experts withdrew into themselves and their work, and had less and less to do with the public and with technicians in other fields. As a human being he became more self-centered, less concerned with what was happening around him, and hostile to any plan of collaboration which would in any way upset his highly developed routine.

This state of affairs was of grave concern to TVA, charged with the responsibility for unified development, and depending for its successful operation on unified, multi-purpose planning and action. As Mr. Lilienthal has expressed it: "the unification of the various technical skills was a central part of our task in TVA, as indeed it is a central part of our problem in American life. The skills are not self-coordinating. In the selection of TVA's technical staff the importance of the expert's need for a broad view was seen. The breadth of TVA's understanding itself made it imperative that we seek out the kind of experts who preferred to work as a part of a unified program.... It is an ironic fact that the very technical skills which are ostensibly employed to further the progress of men, by the intensity of their specialization, create disunity
rather than order and imperil the whole success of their common objective....With time, the barbed-wire fences began to come down within the TVA, the fences between the fields of special knowledge put up to keep one specialist out of the other fellow's domain and keep him on his own, barriers so characteristic of present day science, of education, of engineering, even of theology. The TVA experts themselves soon developed workable methods of teamwork. It began to be taken more and more for granted that each skill is only one part of the unity of knowledge necessary to do the job of developing and conserving resources."

Appendix A describes the programs, relationships, accomplishments and future plans of TVA's development programs and the services facilitating these programs. There is nothing particularly novel about the individual projects entrusted for execution to TVA. Government had been active in flood control and navigation, in forestry and agriculture, and in research. Public power systems were not new. The new thing about TVA was that each activity was to be considered as an inseparable part of a general program to promote the well being of the people of the region. The integration of these varied activities is worth investigating.

1. Lilienthal, Democracy on the March.
Interrelationships of Resource Development Programs

In 1933 many of the Valley's resources were undeveloped and some had been badly misused. There had been no move toward unified resource development and very little had been done in the way of conservation and development of individual resources. Farm lands in parts of the Valley were badly eroded and unfit for cultivation. As in other parts of the country, forests had been cut over with no thought to sustained yield. Forest fires were common occurrences and attempts at reforestation were practically unknown. Every few years devastating floods were causing heavy property damage, particularly in the Chattanooga area, and contributing toward flood conditions on the Ohio and Mississippi Rivers. The region was backward in terms of average income, standards of health, education and housing.

TVA's development programs are all interrelated. Each dam is a multipurpose project, and has been designed to give the maximum amount of flood control, to provide navigation depth to the river, and to produce power. Lake elevations are determined by these factors and also by the authority's malaria control program.

Not only are the dams designed to accommodate these various objectives, but each dam is considered as part of the whole river system. The size and operation of each dam is determined in relation to all the others.
Power is needed to develop the region, to raise standards of living, to simplify day to day chores, and to turn the wheels of industry. Industry will provide opportunities for processing raw materials and will create employment. But power production in itself is not the goal. TVA is concerned with having it used, and conducts experiments to discover and develop new uses. Meanwhile the people of the Valley, many of whom are now being introduced to electricity for the first time, need to be shown what this new source of energy can do for them. To this end TVA, in cooperation with educational institutions of the region, assists in training county agents and home demonstration agents in methods of installation and uses of electricity on the farm and in the home.

The provision of a navigation channel from the Ohio River to Knoxville, which connects Knoxville with the Gulf of Mexico, the Great Lakes, and the Mississippi Valley opens up new transportation possibilities which will in time alter the economy of the entire region. Certain agricultural crops, such as wheat and corn which can be grown more economically in the rich farm lands of the middle west are brought to the Tennessee Valley by grain barges. Valley land, formerly given over to production of inferior grain, can now be turned to a more appropriate use. Water transportation, in addition to cheap power, contributes to create
a strong inducement for the development of new industries needed to relieve pressure from the overworked soil.

The TVA plan has removed permanently from productive use valuable tracts of bottom land, but its water control system has greatly minimized the danger of floods.

TVA directors saw destructive floods as something more than local catastrophes. Local methods of control had cost vast sums and had been ineffective. TVA realized that local flood works are frequently futile and that to get at the root of the problem, it was necessary to go back to the source and control the water in the tributaries. The flood of 1937 put the new theory to its first test. At Chattanooga, the Valley's most vulnerable spot, damage was restricted to a small fraction of what it had been in former floods of similar proportions.

This three way program for conservation of water resources on a coordinated regional basis made the most of opportunities for inland waterway navigation, controlled destructive waters and at the same time produced power which has not only paid its own way, but to a large extent has paid for navigation facilities and flood control as well.

In order to ensure its maximum use for pleasure and recreation, water must be kept clean. To this end TVA conducts a program in stream sanitation which promotes investigation of sources of pollution and programs of pollution abatement.
Agricultural Programs

To check soil erosion by means of encouraging improved farm management practices, to develop new farm equipment, and to pave the way for new processes and markets for agricultural products, are all part of TVA's comprehensive effort to conserve soil and to improve the lot of the Valley farmer.

This program involves the manufacture of fertilizers from TVA phosphate; the putting back of land unsuitable for arable crops into grazing lands or forests; the reconstruction of badly eroded slopes by the building of check dams and the planting of shrubs and trees; the prevention of wastage on arable lands by contour plowing or new cover crops; the diversification of agriculture and the encouragement of dairying and livestock industries on the steep slopes of the Valley better suited to these activities than to row crop cultivation; the conduct of research to determine what the reorganized farms can most economically produce, what markets exist for such products, what can be done in the way of processing these products, and what steps can be taken to create new markets; and the assistance of farm groups and cooperatives in problems of rural organization and management.

Forestry Programs

Closely related to the agricultural and water resource programs are TVA's activities in forestry. A wooded
hillside retains and builds up its top soil, and absorbs and retains for future use large quantities of water. Many of the Valley farms are partially covered with woodland. The Authority, working with other agencies, studies the forests of the region and conducts demonstrations to illustrate the results of improved management, methods of cutting, fire prevention and protection. As with other programs, the goal of the forestry program is to utilize this rich resource for the benefit of the people of the Valley. Studies in forest management and reforestation would do little good, if they were not accompanied by research projects organized to discover new uses for the Valley's timber, the development of processes and methods of manufacture, and market studies to determine the possibilities, in terms of disposal of the product once it is manufactured. Such projects occupy an important place in the work of the Authority.

Of equal concern to the recreational and the forestry programs are the activities in relation to the development of fish and wildlife population in the impounded waters of the reservoirs and on the reservoir lands.

Mineral Programs

The Valley has a great variety of minerals which in the past were considered too low grade to warrant serious attention. Today low grade minerals are being used, and
the availability of TVA power is opening up new processing techniques not previously considered economically feasible. Clay for pottery and manganese for the steel industry, have been made available through TVA encouraged experiments, and aluminum is being produced from white clay abundant in Tennessee, Alabama and Mississippi. Along with its program of development of processes and markets for agricultural and forest products, TVA carries on an active research and development program in connection with the minerals of the Valley, thereby opening up new industries and contributing to the diversification of employment opportunities.

Recreation Programs

The control of the river has done more than provide for navigation, flood control and power, it has created a rich setting for various types of recreation. TVA and state and local agencies have created parks along the edge of the reservoirs with recreation facilities and tourist accommodations. The mountains of North Carolina and east Tennessee are becoming more popular as a summer resort. The nearness of the TVA lakes with their recreational opportunities, when fully developed, will enrich the recreational resource of the region and will contribute toward building a new and important industry for the Tennessee Valley.

Urban Programs

The urban communities are the nerve centers of the
Valley. As the march toward industrialization increases, people are gradually leaving the farms and gravitating toward the towns and cities. This trend will undoubtedly continue. As the urban resource grows and becomes a more potent factor here as it has in other regions, its physical, economic and social well being and orderly development becomes a vital factor in the picture, and therefore of concern to the Authority in its cooperative efforts to create a strong Valley. TVA undertakes, by means of education, to bring about citizen participation in the planning of local communities, so that citizens and officials, working together, will formulate a program and direct the development of their communities.

State and local planning and development programs and state and local governments are encouraged and assisted by the TVA Regional Studies Department.

Facilitating Services

Basic to physical development is an accurate survey. In 1933 there were hardly any maps of the area adequate for TVA's program requirements. Planometric maps were made first, followed by contour maps with the aid of aerial photography. The topographic survey has covered over a third of the Valley, and is being extended to cover the whole Valley.

TVA's public health program has been a major activity from the beginning. Malaria has always been a
menace to the Valley—and the creation of TVA Lakes—without active malaria control—would have spread the disease and brought about eventual collapse to the entire TVA program. The malaria mosquito lays its eggs in the shallow water along the lake edge. Temporary draw-down of water level strands the larvae, and they die within a few days. The problem of malaria control has been kept in mind and has influenced the location and design of TVA dams.

TVA maintains a health service for its employees and assists public health agencies in the Valley. In collaboration with local institutions it conducts research in industrial hygiene and offers assistance in health education.

From the beginning the family and community life of TVA employees has been considered as a part of its responsibility by TVA. Temporary villages equipped with schools, libraries, and health services are provided at construction projects. Married men were encouraged to bring their families. In this way construction workers, moving from one project to another were able to continue their jobs without interruption of normal family life.

Training programs have been provided to increase the efficiency of the workers and to enlarge their range of skills. A TVA inspired resource-use educational program is being carried on by schools, colleges and universities
in the Valley, and college courses are being offered in the administration of natural resources.

The opening up of the water channel has focused attention on the whole problem of freight rates. TVA is using its influence to bring about a reasonable rate schedule, and to encourage a national policy which will permit each type of transportation to perform the job for which it is best suited.

Utilizing the Valleys newly discovered resources, and its inexpensive electric power, TVA conducts experiments in methods of manufacture of new and improved products and makes studies in methods of marketing these products. This information is compiled and made available for the benefit of business and industry in the Valley.

The Authority maintains its own architects and site planners who are responsible for the design of its structures, demonstration parks and recreational areas. These experts are responsible for the design of TVA developments and are available for advice and assistance to those who lease TVA lands for private development.

Mr. Lilienthal emphasizes the inter-relationships of all TVA programs as follows:

"The principles of unity whereby this Valley has gone about the restoration of its land and the multiplication of the land's usefulness are, of course, the same as those
that governed turning this river to man's account. The development of soil and its increased productivity are not simply problems of land, of farming, and of agricultural science, any more than the development of a river is only water control, dam, and engineering techniques. The restoration of land fertility, the filling of gullies, the reforestation of hillsides; these are no more ends in themselves than are flood control, navigation and power. As the river is not separable from the land, so the land is inseparable from the forests and minerals, from the factories and shops, from the people making their living from the resources. 2

Decentralized Administration

One of the unique aspects about TVA is that it works cooperatively with and through state and local institutions. It is decentralized from the federal government and decentralized within its own region. It coordinates in the field the work of all agencies concerned.

State and local governmental agencies in the Valley have joined TVA as partners in a collaborative job of resource development. TVA has instituted the written contract as the device that sets forth mutual goals and responsibilities. Hundreds of these contracts exist between TVA and state and local governments and agencies lo-

2. Lilienthal, Democracy on the March
cated throughout the Valley states.

These contracts set forth in legal terms expressed agreements on aims and objectives. When general resolutions of cooperation are boiled down to specific proposals, there are frequently long hours of discussions and debate between the two parties. As new problems arise and subsequent developments affect the relationships between TVA and the agency with which it has a contract, the original purposes are reviewed and changes are made as necessary.

TVA frequently contributes personnel to strengthen existing agencies. State and local agencies are often brought together with groups in other communities and other states where similar problems are being encountered.

In encouraging state and local agencies to participate in the development of the region's resources, TVA makes a deliberate effort to strengthen these agencies to the point where they will be interested and able to carry on independently.

TVA has worked with state and local agencies to encourage the maintenance of public parks; to stimulate industrial research in discovering new uses of the Valley's resources; to bring about research on soils and fertilizers and farm management practices; and to stimulate state and local planning. These illustrate only a few of hundreds of such cooperative enterprises.
Frequently, in the absence of a state or local agency needed to foster the development of a specific activity, TVA encourages the establishment of the department or agency.
STATE PLANNING IN THE VALLEY AND OTHER SOUTHEASTERN STATES

The southeast today has two types of state planning agencies; those devoted solely to industrial development and promotion and those concerned with overall state planning problems.

The state planning agencies in the southeastern states were organized under the stimulus of NRPB in the early 1930's and all originally were concerned with state wide planning programs. Intervening years have resulted in many changes. The war, for example, brought with it the abolition of the planning agencies in Kentucky, Georgia, Florida, South Carolina, and Mississippi, and in their places were set up industrial development and postwar planning agencies, both specializing in industrial planning and development. Many of these had sizable appropriations. Today post-war employment problems are not pressing, and in some instances, the newly formed agencies may suffer or actually collapse because of their restricted outlook and lack of concern with overall planning problems.

A more comprehensive job is being done in the four states sharing the greater part of the Tennessee watershed. These states are North Carolina, Virginia, Tennessee
and Alabama. TVA has had a stimulating effect on state planning in these states where it has had the greatest opportunity to be of influence. It is significant that these are the only states in the southeast in which planning boards did not suffer a complete reorganization during the war.

TVA has sought to stimulate these planning agencies by means of memoranda of agreement, so far completed with Tennessee, Alabama and Virginia. Under the terms of this agreement, TVA lends assistance to the state planning agency on statewide, as well as local planning problems. North Carolina is developing its program—and in all probability—will adopt such a memorandum with TVA in the near future.

State planning in Tennessee and Alabama has matured well beyond the other states, and although their programs still call for improvement and refinement, these states are ready and able to proceed on their own. From now on TVA can complement the work of these two agencies more effectively as a regional coordinator, and as a contributor to research and special studies, rather than by means of financial aid and demonstration studies.

If state planning in the southeast is going to survive this difficult period, it will need all the assistance TVA can give it. After over ten years of activity, only four out of nine state planning agencies are engaged in comprehensive planning and development activities, and only two of
these have adequate budgets with which to carry out their programs.

State planning activities in the southeastern states of Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, and Virginia are described briefly on the following pages.

**State Planning in Alabama**

The Alabama State Planning Commission was officially established in 1933, and in the same year local governments in Alabama were granted the power to establish planning commissions. The location of a TVA dam near Guntersville, Alabama, which at first glance would threaten the city's physical and economic existence, called for adjustments. Planning was needed and TVA and the State Planning Commission were ready to render assistance. In 1938 the Commission and TVA entered into an agreement for the extension of technical planning services to Guntersville and other reservoir affected communities.

In 1943 a State Planning Board was established to replace the commission, with an annual budget of $75,000. The Board consists of the Governor as chairman, and six private citizens appointed by the Governor because of their knowledge of and interest in the following fields respectively: industry, finance, labor, agriculture, county and municipal government, and the development of natural resources.
State wide or Master Plan Studies

The first of these studies, completed in 1945, and entitled "Health and Medical Care in Alabama," was prepared in cooperation with the Post War Planning Commission of the Medical Association of the State of Alabama, and the Alabama Department of Health. This study was prepared at this time in view of the pending Hill-Burton (S 191) Bill which would release to each state approximately three quarters of the cost of new public hospitals. The study included a draft of the necessary legislation required to implement the plan. This legislation was approved in the 1945 session of the legislature. A study of Alabama's educational facilities is underway at present. Future studies will include water, mineral and forest resources, recreation and public buildings.

State-wide Industrial Studies

Industrial development research at both the state and local planning level constitutes an important activity of the Board.

"Industrial Opportunities" studies are published which show value of products, value added by manufacture, numbers of persons employed, average wages, materials consumed in the industry, the geographic picture of present production, an estimate of the Alabama and Southeastern market, and methods and materials of production, for each of
the 446 types of industry listed by the U. S. Census.

In cooperation with the Bureau of Business Research of the University of Alabama and the State Revenue Department, a tax study has been undertaken in order to determine the relation between Alabama tax policies and industrial development.

County Planning

County planning is limited to industrial development studies and the preparation of "Land Capability" maps which are being made for each county. When a county asks for an analysis to determine what direction it should take in the process of industrial development, the Planning Board will study the problem, and on the basis of resources and opportunities, will recommend the types of industry best suited to the county. The county selects one of these suggestions and the Planning Board then proceeds on a detailed study of the industry chosen in terms of its development in the county in question.

Local Planning

In 1945 the Planning Board was cooperating with 18 municipalities and 4 counties on formal planning programs. Before securing this assistance, the local unit is required to establish a planning commission which must enter into a formal contract with the Planning Board. TVA supplies
technical and advisory assistance to the northern Alabama Valley towns and counties. With the exception of TVA assisted communities, all municipalities and counties are required to pay part of the cost of the planning program. At present the State pays $2.00 for every $1.00 contributed by local communities.

Other Activities

The Board maintains a reference and technical library for its own use. At various times reports are published on special subjects, particularly in relation to its local planning assistance program.

The Board's annual appropriation in 1945-46 amounted to $110,000.

State Planning in Florida

The Florida State Planning Board was appointed by the Governor and started its work in April 1934. A year later the Board published carefully prepared reports of the following committees:

- Transportation Committee on Highways, Rail, Air, and Water.
- Education Committees
- Committee on Taxation and Government
- Report on Water Resources
- Report on Public Works Committee
In June 1935 the legislature gave the Board an official status by passing a bill that had been prepared and approved by the Planning Board.

From 1935 on there is little information available regarding the operations of the Board, other than the fact that they maintained active contact with the southeastern regional office of NRPB and published a handbook for local planning procedure on county planning for Florida. In 1942 the Board's general planning program gave way to a program of special studies, requested by the Governor's Defence Council, on War and Post-War problems.

At some time between 1942 and 1945 the Board was dissolved, and The Florida State Improvement Commission was set up in its place, with an annual appropriation of $50,000. The Commission is made up of the Governor, the Chairman of the State Road Department, and three citizens of the state.

State Planning in Georgia

The Georgia State Planning Board was established in 1937. The National Resources Planning Board report on state planning published in June 1942, lists the following activities of the board:

- Industrial Studies
- Mineral Resources Survey
- Information Service
- Housing
- Special war and postwar Planning Programs
The Board was abolished in 1943 and a new organization, known as the Agricultural and Industrial Development Board of Georgia was created (with an appropriation of $100,000) and charged with the development of the state.

During the past two years a variety of studies have been completed on agriculture, education, government, health, industry, public works, and trade and commerce. Emphasis has been placed on industrial development.

1944-45 expenditures amounted to $167,166.40, and during that same year the total personnel of the board, including full-time and part-time workers was 58.

State Planning in Kentucky

The National Resource Planning Board Report for June 1942 lists the Kentucky State Planning Board as follows:

"Law enacted March, 1934 (Ch. 29.), Functions transferred to Governor's Cabinet March 7, 1936. (Ch. 1.)."

The first signs of activity occurred in November 1944, when the Postwar Advisory Planning Commission of Kentucky was established.

In 1945 the Commission published a comprehensive report setting forth an account of the work of the following committees:

- Returned veterans
- Education
- Industrial Relations
Industrial Plants and Opportunities

Coordination of Federal, State, County, and City Governmental Activities

National Resources

Organic Laws and Legislation

Transportation

The reports are mostly concerned with statements of problems and broad policy recommendations, and are not carried through to the stage of suggesting techniques for action.

A citizens group known as the "Committee for Kentucky" conducts studies setting forth conditions, and promotes action as a result of its findings.

State Planning in Mississippi

The Mississippi Board of Development was legally established in 1940. Its activities consisted of supervision of the following WPA projects:

An industrial survey of cities between 2,000 and 35,000.

A state wide property identification mapping project.

Existing recreational areas and facilities in the state.

War and postwar planning programs were also the responsibility of the Board.

In 1944 the Mississippi Board of Development was abolished and the Mississippi Agricultural and Industrial Board was established with an annual appropriation for 1945-46 of $65,000.
This new Board is concerned only with industrial development. An unofficial body, known as the Governor's State Planning Council was set-up in 1945 to organize citizen councils in towns over 25,000. In May of that year this group inquired regarding the possibilities of TVA help in "city planning." The lack of a program of planning assistance to local communities has precluded any active program of cooperation on the part of TVA.

Meanwhile, however, the TVA has undertaken a demonstration project in Tupelo, Mississippi, which should stimulate local planning support in the state.

State Planning in North Carolina

The North Carolina State Planning Board was authorized in 1937 but remained inactive until 1943. In January of that year Governor Broughton recommended allocation of funds from contingency and emergency funds "as may reasonably be necessary to supplement the work of the board."

A meeting was held at Raleigh in October 1943 at which time the Board was reorganized. The board membership consists of four heads of state departments of which one must represent the Department of Conservation, and four citizens.

From the beginning the University of North Carolina has contributed active support and until recently provided office space for the director and his staff.
The North Carolina State Department of Conservation includes in its activities a Division of Industrial Development which concerns itself with industrial promotion, and leaves the job of industrial research to the Planning Board.

Planning assistance to local communities has been held up partly because of lack of funds and partly due to a feeling on the part of the Board that such activity would result in accusation of favoritism on the part of these communities not receiving help.

An agreement with the TVA relating to planning assistance to Tennessee Valley communities in North Carolina is pending. In July 1946 the Board appointed a community planner to assist local areas in community organization for planning.

The board received an appropriation during the current year (1945-46) of $29,780.

The major activities of the State Planning Board since July, 1944 are as follows:

Local Planning

Local planning is encouraged by means of assistance to local communities in establishing planning boards, by offering advice on their activities, by providing a clearing house of information, by issuing periodic reports on local community planning activities, and by providing research assistance.
Published material consists of such studies as "An over-all Survey of the Needs and Opportunities of Cleveland County"; an "Outline of a Suggested Model Type of Local Planning Set-up"; and "Basic Material on North Carolina Counties."

The Board stresses the need of personnel to carry on this work.

Public Works

A survey of public works needs of state departments and local units of government has been completed. The estimated cost of such projects is included and the amount of employment each project would provide.

Postwar Employment

Surveys have been conducted showing the size of the postwar labor force, the estimated number of jobs available and the probable extent of unemployment.

Economic Planning and Industrial Development

Industrial studies are made to encourage the establishment of locally owned and managed industries, utilizing local resources. These studies analyze industrial conditions and opportunities, point out industrial deficiencies, and estimate potential buying power in North Carolina and in the southeast.
The Board is conducting an experiment in the use of cotton for paper pulp.

Tax Studies

Tax studies have become an important part of the work of the board. The most recent of them is "Tax Bill of a Selected Manufacturing Corporation in Six Southeastern States" prepared by Professor Clarence Heer of the University of North Carolina for the Planning Board.

State Research and Fact Finding

The Board functions as an aid to the Governor, the General Assembly and other state agencies in conducting specific studies on such subjects as surveys of state agencies providing services to veterans, activities of other states in the field of public health, and a study of the development possibilities of the Port of Wilmington, N. C.

Coordinating Agency

As a coordinating agency the Board brings together coordinating committees of the various departments to consider state problems which have to do with several state departments.

State Planning in South Carolina

From 1933 to 1938 the South Carolina State Planning Board was a temporary body, appointed by the Governor to make
specific surveys, and had no legal status. During those years surveys were made on the building needs of state institutions, on land planning problems, on the development of water resources, on the state's natural resources and on school equipment and plants in the state.

In 1938 the General Assembly enacted legislation setting up the State Planning Board, composed of nine members, three to be appointed by the Governor, three to be elected by the Senate and three by the House. Reports on projects completed under the regularly constituted Board were as follows:

The Fiscal System of South Carolina
The Natural Resources of South Carolina
The Manufactured and Agricultural Resources of South Carolina
Miscellaneous Research projects and Surveys

In 1945 the Board was discontinued and a new organization established known as the Department of Research Planning and Development with an annual appropriation during the 1945-46 fiscal year of $50,000.

State Planning in Tennessee

The Tennessee State Planning Commission received its legal status in 1935. With TVA advice and assistance the Commission has developed an active and well rounded program under the following divisions:
Research

General research, required for all divisions, is conducted, together with special studies for the Governor and General Assembly, maintenance of reference library and files, and responsibility for the Commission's publications including "The Tennessee Planner," a bi-monthly periodical.

State Planning

This division is responsible for the development of a state plan for the coordination of physical plans of other agencies, and for the development of a state public works program.

Industrial Development

This division carries out a program of resource utilization and industrial development, coordinated with programs of TVA, University of Tennessee, Department of Employment Security, Division of Information, Department of Conservation, and other agencies, under the direction of an Industrial Planning Council composed of representatives of industry, labor, and federal and state agencies. Studies are developed relating to the potentialities of various resources. Assistance is given to industries desiring to locate in the State, and to communities seeking new industries.

Local Planning Assistance

Technical assistance is made available to county,
regional, municipal and community planning commissions on the development of plans for physical development. Assistance on the development of zoning ordinances, plans for streets, schools, recreation, utilities, and other aspects of community development is made available through four regional offices located throughout the State.

Community Services

This Division provides technical assistance to counties and municipalities in the development and coordination of local social and welfare activities, under the direction of the State Community Services Council. This program developed during the war under the State Defense Council, and this Division makes permanent those phases of the program whose value will last beyond the war years.

Budget

Budget figures for 1945-46 consisted of an appropriation of $75,000, supplemented by contributions from TVA of $4,700, from local communities of $4,500 and from the sale of publications of $800.

State Planning in Virginia

The Virginia State Planning Board was appointed by the Governor in 1933. The Board received its first assignment in 1934 with an authorization to prepare a comprehensive program of public works and to cooperate with the National
Planning Board in other programs.

In 1935 the Board procured financial aid in the form of a grant from the Spellman Fund to assist in its work. In 1938 the State Planning Board became a statutory agency under an act of the General Assembly which assigned duties as follow:

To collect and correlate information relative to state development and conservation.
To discover and utilize research to make necessary studies, and to act as a clearing house for planning matters.
To encourage and aid local planning boards.
To cooperate with all planning agencies and to coordinate the work of state departments.

A restatement of aims and objectives in 1942 sets forth a continuation of the above program with emphasis on cooperation in getting plans into action through the proper agency or authority, and adds a program in postwar planning.

The Board has entered into an agreement with the League of Virginia Municipalities whereby the services of the League's field consultant will be made available on request from local authorities.

The Board appropriations for 1945-46 was $44,665.

A memorandum of agreement was entered upon between TVA and the Virginia State Planning Board in June 1946, relating to planning assistance to Tennessee Valley communities in Virginia.
One of the most interesting planning activities in Virginia is the program now being carried on by the Washington County Development Association. The story of this Association is published by the Extension Division Publication, New Division Series (October 1, 1945, Charlottesville, Virginia), and is entitled "Now is the Time--Washington County Development Association Plans for Action."

TVA is assisting the State Planning Board in advising the Association and has utilized this relationship to conduct research and studies of community organization for planning.
The National Resources Planning Board which had encouraged the establishment of state planning agencies in the southeast, organized a series of Regional Planning Conferences, the first of which met at Savannah in 1935.

The principal objectives of these conferences were stated as follows:

1. To bring together those interested in present and prospective planning activities.

2. To provide an opportunity for exchange of information and experience between the representatives of state and local governments, as well as others interested.

3. To stimulate interest in planning.

These meetings were primarily promotional in character. The speeches covered a wide variety of subjects from "National Planning" to "Citizen Support for Planning."

Subsequent meetings of the Planning Conference were held in 1936, 1938, March 1939 and December 1939.

In 1940 the Southeastern Regional Office of NRPB called a meeting of the Directors of state planning agencies of the southeastern states to consider the advisability of forming a Regional Planning Commission. The work of regional
planning commissions in other parts of the country was outlined, and a discussion followed but no action was taken.

With the collapse of NRFB, TVA took the initiative in exploring further the idea of a regional conference. Representatives from the state planning agencies in the Valley met at Knoxville in 1945 and again in 1946. Preliminary discussions at these conferences indicated the advisability of regular regional meetings.

Brief reports of these regional meetings are given below.

The First Southeastern Planning Conference, Savannah, Georgia December 1935

The first Southeastern Planning Conference was held in December 4 and 5, 1935, at Savannah, Georgia. The program was arranged by H. T. McIntosh, District Chairman under the National Resources Committee - whose District (No. 4) was made up of South Carolina, Georgia, Florida, and Alabama - with its headquarters at Atlanta.

115 individuals attended the conference.

The program dealt with National, Regional, State and Local Planning, and papers were presented by representatives of the following agencies: State Planning Boards of the four states, City Planning Commissions of the four states, the National Resources Committee, the U. S. Forest Service, County Planning Boards in the four states, WPA, TVA and the University of Florida.
The papers covered such subjects as National Planning, City and County Planning Organization, State Planning, Regional Planning, Forestry Planning, and Cooperation at Different Levels of Planning.

The Second Southeastern Planning Conference, Jacksonville, Florida, October 1936

In 1936 the Southeastern Planning Conference met again at Jacksonville, this time including officials from "those states which might logically be included in the prospective Southeastern Planning Region." Six states were represented including the four which had met the previous year plus Virginia and Tennessee. 24 County Planning councils were represented. 170 individuals were registered at the conference.

The speakers included representatives of the following organizations: National Resources Committee, Virginia State Planning Board, University of Georgia, National Planning and Civic Association, Florida State Planning Board, and the University of Florida.

The Third Southeastern Planning Conference (1938)

This meeting was sponsored jointly by the Planning Boards of Alabama, Florida, Georgia, Mississippi, South Carolina, Tennessee, and the National Resources. A report of this conference is not available.
The Fourth Southeastern Planning Conference, Columbia, South Carolina, March 1939

The conference was sponsored by the 1938 group, and the South Carolina Board acted as host at Columbia, South Carolina.

The program committee was made up of the Regional Chairman of the National Resource Committee, the head of TVA's Regional Studies Department, a planning technician from the National Resources Committee, and the director of the South Carolina Planning Board.

The program consisted of reports of the sponsoring state planning agencies. North Carolina although not one of the sponsors was also invited to report. Speakers represented the National Resources Committee, the National Park Service, state departments and state educational institutions.

The Fifth Annual Southeastern Planning Conference, Hollywood, Florida, December 1939

The fifth Southeastern Planning Conference, sponsored by NRPB and the Florida State Planning Board, attracted a registration of 274 persons. According to the report of the conference each of the six states in the Southeastern Planning Region was well represented, as was the National Resource Planning Board and the Tennessee Valley Authority.

The keynote of the conference was "Local Planning in the Southeast." This meeting was combined with the Florida Park and Recreation Conference entitled "Coordinating
Recreation in Florida."

The Initial Meeting of the Southeastern Regional Planning Commission, Atlanta, Georgia, October 1940

This meeting was organized by the NRPB regional office at Atlanta and attended by the Planning Directors of the six states and a member of the Board from each state. Five representatives from NRPB were present at the meeting, and TVA was not represented. Henry T. McIntosh, Southeastern Regional Chairman of NRPB, presented a prepared statement suggesting a program for the committee to follow and offering support from NRPB. Each state representative then discussed the most pressing problems of his state, and brought forth the regional implications of these problems.

Mr. John Miller of NRPB told of the activities of three other regional planning agencies as follows:

The New England Regional Planning Commission operated as a collaborative venture with the New England state planning boards. The Commission set up an "Advisory Committee" of over 1000 civic leaders, all of whom received the publications of the commission and worked for the furtherance of its recommendations within their committees. The program of the commission concentrated on problems of water resources, recreation, and transportation.
The Northern Lakes States Regional Committee had its origin in a congressional resolution introduced by a representative from Michigan and asking federal agencies to study problems of the cut-over area in Michigan, Minnesota, and Wisconsin. The Regional Committee proceeded to enlist the facilities of state and local agencies to supplement federal activities toward the solution of this problem.

The Pacific Northwest Regional Planning Commission was the outgrowth of years of thought among leaders in the states of Washington, Oregon, Montana and Idaho. A citizen group, known as the Pacific Northwest Regional Council, worked closely with the committee in encouraging consideration of development possibilities through a general education program.

Conference between Representatives of State Planning Agencies and TVA, Knoxville, December 12 and 13, 1945

The purpose of the meeting was to consider the possibilities of expanding cooperative relationships in identifying industrial-business opportunities, and in local planning problems.

Eleven individuals were present including seven representatives from state planning agencies in Alabama, Georgia, North Carolina, Virginia and Tennessee and four state planning board directors. TVA representatives were
drawn from the staff of the Regional Studies and Commerce Departments.

TVA took the lead in the conference. Two reports, one on objectives and one on methodology were prepared at the conference by the state planning board representatives. These reports stress the importance of collaborative action among the Tennessee Valley state planning agencies and outlined a preliminary plan by which such action might be feasible.

Conference of Representatives of State Planning Agencies and TVA. Knoxville, May 16, 1946

Representatives were present from Alabama, Tennessee, Georgia, North Carolina and Virginia. The Southern Educational Film Production Service was represented by Nicholas Read - Director, and W. J. McGlothin, Chairman of the Board. TVA was represented by five individuals. The major purpose of this conference was to discuss possible collaboration in the production of a film to promote local planning in the southeast. A meeting was also held on the subject of the work of the Industrial Economics Division of TVA.
RECOMMENDATIONS

This report has attempted to trace the growth of public policies in relation to natural resources, to illustrate the work of the various agencies concerned with planning and resource development in the Tennessee Valley States, and to investigate programs of southeastern regional planning conferences and committees.

In the early days, in order to encourage colonization and to swell the federal treasury, the public domain was something to be disposed of at any price. This policy prevailed until the early nineteen hundreds when the conservationists turned public sentiment in the direction of saving and setting aside our resources in permanent government ownership. This concept paved the way and formed the foundation for our present day approach to resources, which is embodied in the term, resource utilization. The TVA Act marked the beginning of the movement toward resource utilization, or resource development, and specified that this development be brought about on a unified basis.

At an early period in its history, TVA decided that its responsibilities in regional development would best be carried out in cooperation with state and local institutions. These institutions have been called upon to assume direct
responsibilities in connection with many programs of the Authority. In a number of instances they have become strong enough, as a result of TVA assistance, to carry on the whole job by themselves, and have taken over full responsibility for activities formerly shared with TVA.

State planning agencies, because of their interest in overall planning and development, constitute an important activity of state government. Strong state planning agencies can do much to help TVA in carrying out its program, and TVA, in turn, is in a strong position to lend support to state planning.

Southeastern regional planning conferences and committees have met in the past under the leadership of NRPB and more recently at the suggestion of TVA. Some such regional organization is needed in order to tie together and integrate the work of the planning agencies in the region.

Regional associations with specific interests are beginning to appear as an outgrowth of activities in a number of TVA departments. Agriculture has its well organized Valley States Conference, which is tied together and organized by an executive secretary on TVA's payroll. This organization, based on a memorandum of understanding, between TVA, USDA, and the land grant colleges is being investigated in an effort to determine if such an administrative device might be developed in relation to other TVA departments. Navigation
has its Tennessee Valley Water Ways Conference. The Educational Relations Staff, through its Specialist in library services, encouraged the formation of the Tennessee Valley Library Council in 1941. The Electrical Development Division of the Power Department is currently receiving $100,000 per year toward its work from a regional association of power distributors.

If this is to be the goal for each TVA Department, the success of these TVA-encouraged regional groups will depend to a large extent on TVA's methods of promoting such projects, and in the amount and type of support TVA plans to give them. In most of these groups TVA has played the role of a partner, and has refrained from projecting itself into a position of permanent leadership. Meetings are held not only in Knoxville, but in other centers throughout the region. Paid personnel in the way of a secretary or coordinator may receive his salary in the beginning from TVA but it is generally understood that this contribution can be made only during the launching process--and that withdrawal of financial support after a few years is to be expected.

State planning board directors and staff members have put forth suggestions for more effective integration of their resource development programs with TVA's activities. Most of these proposals centered around a desire for closer knowledge of each others plans and activities. As one state
planning board director expressed it—"you can't have integration without knowing what the other fellow is doing."

Another point brought forth by several state planning staff members centered around a desire to have TVA's study and research projects directed, to a greater extent that has been done in the past, toward their needs. All agreed that there was a need for a regional association of state planning agencies, and that any such association should not be limited to the Valley states, but should include those states generally referred to as the Southeastern states.

Specific suggestions from the state planning personnel were as follows:

a. That a Southeastern Regional Planning Association or Conference be organized and that meetings be held twice a year.

b. That a newsletter be published bi-monthly or quarterly giving news of TVA work and a bibliography of TVA publications.

c. That other Departments beside Regional Studies and Commerce could help to promote the work of state planning agencies by paving the way for representation of these agencies at regional conferences relating to specific activities.

d. That TVA study and report upon industrial deficiencies in the Valley states.

e. That studies be made of industries requiring relatively small capital investment.
Strong state planning agencies are essential to TVA's program. They are the only state agency concerned with unified resource development. They are responsible for maintaining a broad view of state development problems. They assist the governor and the executive departments in the formulation and carrying out of well coordinated state development programs. They coordinate the work of state departments thereby eliminating duplication of effort. They are in a position to identify gaps in state development programs and to stimulate action to fill them. They work through existing agencies, particularly local planning agencies, contributing advice and support in order to stimulate county, city and town planning activities.

In short, a well organized and directed state planning agency will have the same relation to the state departments and to local communities that TVA has to the state. TVA is charged with regional resource development. State planning is responsible for state resource development. Both agencies are concerned with unified development.

State planning is a vital link in the chain of TVA--state--and local relationships. It is important that steps be taken to put it on a firmer basis that it is at present, and to encourage each state to maintain a broad approach to unified resource development. The most effective way to bring this about is through the medium of a regional
association which will integrate the work of all agencies concerned with unified resource development.

Such a regional association would serve as an instrument to stimulate more effective state planning and development. It would meet at regular intervals to discuss regional problems, plans for regional development, and proposals for action.

The question is what kind of a regional association? Should it be composed only of planning board directors and a representative from TVA, or should national planning groups, and southeastern planning educators, and others concerned with resource development be included.

Will a regional association of state planning agencies and TVA be able to give adequate consideration to regional problems—or should the association support a regional staff or commission charged with responsibilities of its own, in addition to its duties to the state planning agencies?

Should this association sponsor southeastern conferences such as NRPB encouraged in order to stimulate interest in and public support of planning throughout the region?

What part should TVA play in such an association, and what can the association do for TVA?

All these and many other questions present them-
selves. The objectives and program of the association should be determined by its members. The recommendations that follow are intended only to serve as material for discussion, not as a blueprint to be followed.

It is recommended that TVA send out invitations in the near future to the planning directors in the Valley states proposing a meeting to explore the possibility of organizing a Southeastern Regional Planning Association which would meet at regular intervals, and confer and act upon studies, research, and programs of action on problems of concern to the southeastern region, or to more than one state within the region.

The objectives of the Southeastern Regional Planning Association would be as follows:

1. To integrate the work of the 9 state planning agencies, TVA, and the planning activities of southeastern educational institutions in problems of regional significance.

2. To serve as a medium for an exchange of ideas on techniques and methods of handling common problems.

3. To identify fields of research, areas of investigation, and techniques for action, the results of which would be of special use and value to members of the conference in carrying on their individual state planning and educational programs, and to determine ways in which studies and materials may be developed by cooperative effort or by outside assistance.
4. To develop a regional clearing house for co-relating activities of various southeastern public, private and educational agencies working in the field of planning, and for advancing a region wide planning program.

5. To promote the planning movement throughout the southeast by means of regional conferences to be held at various points throughout the region. Such conferences would provide opportunity for the presentation of planning programs and results to public officials and representative citizens.

Proposals for Membership

The membership of the Association would be made up of representatives of state planning agencies, educational institutions, and TVA as follows:

State Planning--The director and one staff member from the planning agencies of the following states: Kentucky, Virginia, Tennessee, North Carolina, Mississippi, Alabama, Georgia, South Carolina, Florida. Total 18.

Education--Representatives of those southeastern educational institutions engaged in instruction or research in planning or public administration: the Universities of Kentucky, Tennessee, North Carolina, Alabama, and Georgia. Total 5.

TVA--Representatives of the following Departments: Regional Studies, Commerce, Health and Safety, Agricultural
Proposal for Organization

It is proposed that the activities of the Association be directed by a five member board, three of whose members would be state planning board directors, one representing TVA and the other representing education. Since the primary purpose of the association is to strengthen and amplify the work of the state planning agencies, it is important that state planning representatives should dominate numerically throughout the Association.

These five individuals would direct the activities of the Association with the assistance of a full time, paid, executive secretary, with headquarters preferably with TVA at Knoxville.

The executive secretary would be charged with the responsibility of carrying out the instructions of the directors, of planning all meetings, and keeping in touch with and stimulating the work of all committees.

It is proposed that the work of the association be carried on by a group of committees. These Committees, each with a chairman and a correlator (who would meet with other correlators when necessary) would be responsible for the activities of the Association in the following fields:
Research and Regional studies
Organization and relationships
State-wide planning
Administrative planning
Local and county planning
Agricultural and industrial development
Education

The executive secretary would be an ex-officio member of each committee. These committees would be formed around the fields of operation of the planning agencies. As condition change, and new activities develop, the committee activities would reflect the trends.

It is proposed that each member of the Association be elected to a committee, so that the responsibility for the work of the Association will be shared by all members.

Since all members of the Association would be handling full time jobs, and could give only a limited amount of time to the Association, it is clear that a large part of its effective operation would depend on the imagination, resourcefulness and administrative ability of the Executive-Secretary.

Ideally, and as soon as is practicable, the Association should maintain a paid staff to conduct its regional studies. The cost of this work would be shared by the state planning agencies.
SOUTHEASTERN REGIONAL PLANNING ASSOCIATION

Suggestions for Organizational Set-Up.

Board of Directors

- 3 State Planning Board Directors
- 1 TVA Representative
- 1 Representative from Education
  (Note: Chairman to be elected by the Directors)

Executive Secretary

Staff or Committee on Research and Regional Studies

Committee on Organization and Relationships

Committee on State-Wide Planning

Committee on Administrative Planning

Committee on Local and County Planning

Committee on Agricultural and Industrial Development

Committee on Education
IN ORDER TO REPORT ON THE INTEGRATION OF TVA AND VALLEY STATE PLANNING BOARD PROGRAMS, IT WAS NECESSARY TO BECOME FAMILIAR WITH THE RESOURCE DEVELOPMENT PROGRAMS OF TVA. THE FOLLOWING NOTES WERE MADE AS PART OF THAT PROCESS AND REPRESENT THE AUTHOR'S IMPRESSIONS OF THE PROGRAMS GAINED FROM INTERVIEWS AND FROM PUBLISHED AND UNPUBLISHED MATERIALS; THE PROGRAM DESCRIPTIONS ARE, THEREFORE, NOT TO BE CONSTRUED AS OFFICIAL TVA STATEMENTS.
RESOURCE DEVELOPMENT PROGRAMS

How does TVA organize itself for resource development? The 1946 TVA Annual Report classified the following activities under the heading of resource development:

- Minerals Development
- Housing Development
- Community Planning Assistance
- Aids to Food Processors
- Forest Research
- Recreation Report
- Resource Agencies Study
- Freight Rate Parity

The 1946-47 TVA Budget lists development activities as follows:

- Agricultural Resource Development
- Forest Resource Development
- Minerals Resource Development
- Development of Other Resources
  - Stream Sanitation Investigations
  - Fish and Game Resource Development
  - Recreational Resource Development
- Other Development Activities
An analysis of TVA resource development programs submitted to the Bureau of the Budget in October, 1945, lists the following programs:

- Navigation Programs
- Flood Control Programs
- Agricultural Resource Development
- Forest Resource Development
- Mineral Resource Development
- Stream Sanitation Program
- Fish and Game Resource Development
- Recreational Resource Development
- Topographic Mapping Program
- Transportation and Industrial Economic Studies
- Advisory Assistance to State and Local Governments
- Public Health Studies
- Housing Research

In other words, there seems to be no set pattern within the Authority as to what properly constitutes a resource develop-
ment program. An attempt has been made in this report to cover the activities of most of TVA's departments in terms of resource development programs or programs facilitating resource development.
"To improve the navigability and to provide for the flood control of the Tennessee River; to provide for reforestation and the proper use of marginal lands in the Tennessee Valley; to provide for the agricultural and industrial development of said Valley; to provide for the national defense by the creation of a corporation for the operation of government properties at and near Muscle Shoals in the State of Alabama and for other purposes." - So begins the Tennessee Valley Authority Act.

Section 9a of the Act stipulates "The Board is hereby directed in the operation of any dam or reservoir in its possession and control to regulate the stream flow primarily for the purposes of promoting navigation and controlling floods. So far as may be consistent with such purposes, the Board is authorized to provide and operate facilities for the generation of electric energy . . . . to transmit and market such power . . . . and thereby . . . . to assist in liquidating the cost or aid in the maintenance of the projects of the Authority."

Thus the control and development of navigation and the provision of facilities for flood control, along with the
operation of the Muscle Shoals plant are, according to statute, the primary reason for TVA. All other activities, including the power program, are supplementary and are created to facilitate these two major objectives. Power—the "paying partner," brought in 4.8% on the average investment assignable to power in 1945 and 4.1% on the investment in 1944, after deduction of production, transmission and operating expenses, tax equivalents and depreciation.

Navigation, flood control, and power programs probably have had less connection with state planning agencies than any other TVA programs. On the other hand, the stream sanitation program, which crosses the interests of a multitude of federal, state and local agencies and TVA departments, has effectively utilized the state planning agencies.

**Power Production and Use**

**Purpose of Program**

The TVA Act grants power to produce, distribute and sell electric power and to stimulate the use of electricity throughout the valley.

**Department Responsible**

TVA's power program is carried on under three departments as follows:

- Department of Power Utilization
- Department of Power Engineering and Construction
- Department of Operations
Agencies Cooperating

The Federal Power Commission and TVA Power and Commerce Departments cooperate in rate questions, power supply information, general data, exchange of personnel, protection matters and exchange of data on classification of accounts.

Income and Expenditures

Power Revenues

<table>
<thead>
<tr>
<th>Year</th>
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<th>Amount</th>
</tr>
</thead>
<tbody>
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<td>1945</td>
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Power Expense

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<td>1947</td>
<td>Estimated</td>
<td>$3,455,000</td>
</tr>
</tbody>
</table>

Accomplishments

TVA's annual report for 1946 revealed that the Oak Ridge atomic energy project and war production industries used three-quarters of the 12 billion kilowatt hours generated during the preceding fiscal year.

Many felt that the war and possibly the atomic project had justified TVA's vast expense for power production—but that the end of the war would find the U. S. Government with a white elephant on its hands. The end of the first
post-war year proved that there was no cause for anxiety. Power sales in July 1946 had reached an all time high, and conversion to peace time activities was in full swing. Power revenues for the fiscal year 1945 were up 11% over revenues for 1944 and net income from power operations showed an increase of 27%. The return on the net average power investment was 4.8% as compared with the previous years 4.1%.

TVA power served 600,000 consumers and was being distributed by 137 locally owned and managed municipal and cooperative systems. The average domestic consumer of TVA power used 48% more electricity than the average domestic consumer in the United States, and his electric bill was 21% lower.

In 1933 the number of residential consumers in the area now served by TVA power was estimated at about 250,000, whereas today the number is about 520,000. Rural electrification, although held up during the war, has made strides during the past 12 years. In 1933, one farm in twenty in the Valley states had electric service, and in 1944 one farm in four was using electricity.

Power Contracts

TVA has power contracts with four basic groups--municipalities, cooperatives, counties, and private corporations.
Municipalities. There are a total of 92 municipalities with 20 year power contracts. TVA agrees to supply power at the wholesale rate and the municipalities are to use their surplus income in the following manner:

First To amortize the electric system.
Second To build necessary additions to the electric system.
Third To reduce electricity rates.

Cooperatives. Cooperatives are owned by members who have borrowed the necessary capital. The average member pays about $5.00 and the loans are usually financed by REA. Cooperatives pay taxes in the State of Tennessee, but not in Mississippi and Georgia.

Counties. TVA has contracts with 3 counties. These are similar to contracts with municipalities. The county is not assessed for taxes by the state, but contracts cover payments in lieu of taxes.

Private Corporations. Private corporations include the Aluminum Company of America and other large power users such as Oak Ridge.

Power Rates

All power distribution systems contracting for TVA power are required to start with the same basic rates, which are approximately 50% less than the rates prevailing in other parts of the country. In many communities these
rates have been further reduced by another 50%. Increased use of electrical appliances, encouraged by cheap power, has resulted in cheaper power for all TVA customers.

**Electrical Development Work**

TVA carries on a program in electrical development to stimulate the use of electricity. This program provides technical advice and assistance in such fields as lighting, domestic appliances, industrial power, rural electrification, and the development of farm uses for electricity and electric heating.

**Plans for Future**

With all but two dams completed, TVA's 24 hydro plants and 6 steam plants together produce most of what the authority has set as its goal. From now on the major job is to distribute the power to all the people and to see to it that this cheap and plentiful power will simplify daily tasks.

In order to coordinate the work in electrical development, a group of power distributors located throughout the Valley and some outside the Valley have appointed a regional committee, made up of representatives from among the group. This committee decided that the TVA electrical development work should be expanded at the expense of the local power companies. The cost of TVA's electrical develop-
ment program for the coming year will be $300,000, of which the distributors have agreed to cover one-third of the expense. Few TVA programs can claim such handsome support from the Valley as that of the Electrical Development Division.

The TVA Power Department maintains contact with the states through its power distributors. TVA Power personnel would welcome an opportunity to integrate their work more closely with state planning agencies, especially in the field of industrial development, and have made progress in this direction in Mississippi.

**Navigation Operations**

**Purpose of Program**

This program provides for modern and efficient navigation on the Tennessee River and assists in obtaining the services, facilities, and conditions necessary for the people to make the best use of the river channel.

**TVA Department Responsible**

The River Transportation Division of the Commerce Department.

**Cooperating Agencies**

The U. S. Coast Guard establishes channel markers and TVA supplies information relative to the location of the
channel. The Corps of Engineers approves plans for structures affecting navigation in the channel. State and local planning commissions cooperate on the development of plans for water front lands. Local land-use associations or local conservation associations assist in the management and maintenance of small river landings constructed by TVA. The Tennessee Valley Waterways Conference - an organization of business men, representing major river communities, informs TVA of local needs for river transportation.

Annual Expenditures

<table>
<thead>
<tr>
<th>Year</th>
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<td>1944</td>
<td>$159,205.00</td>
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<td>$121,161.00</td>
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</table>

Accomplishments

The 9-foot channel from the Ohio River to Knoxville is essentially complete. Four general-purpose public-use terminals and one special-purpose coal loading terminal have been constructed and are in operation. Assistance has been given in the planning of a substantial number of private terminals and water-front developments. Navigation charts have been completed for five reservoirs and are in preparation for the other reservoirs. A number of surveys and studies have been completed as follows:

- History of Navigation on the Tennessee River 1937
- Prospective Commerce on the Tennessee River 1941
The Problem of Commerce Carrier Barge Line Service for the Tennessee River 1942

Barge-Rail Transportation of Grain to Southeastern Mill Points via the Tennessee River 1944

River Shipment of Iron and Steel to and from Points in the Southeast via the Tennessee 1946

River traffic has increased from 30 to 40 million ton miles in 1933 to approximately 250 million in 1945. This increase, while spectacular, still leaves the river traffic well below what is needed for a favorable comparison with other navigable waterways. The River Transportation Division of TVA estimates that this traffic should increase to 700 ton-miles per year if it is to compare favorably with traffic on other navigable rivers.

Plans for the Future

With the channel complete—the program for the future includes improvement of the locks, chartering of the channel, and improvement of the channel marking system.

Perhaps more important than these purely physical objectives are studies, research, and planning to promote the use of this newly developed facility by means of a more equitable system of freight rates. TVA's River Transportation Division encourages comprehensive planning to eliminate competition among different types of transportation and to permit each type to serve the purpose for which it is best
suited. Although TVA would not take action directly on this matter—it is engaged in a program of education on the problem with the hope that organized groups such as the Tennessee Valley Waterways Conference will formulate plans toward improving this situation and carry those plans into action.

State Activities

The work of the state planning boards on activities related to navigation has consisted of:

1. Physical planning of water-front development of river communities.
2. Industrial development studies in which the problem of transportation costs has been considered.

Undoubtedly the physical planning work will continue and become more active as the river traffic increases. The state planning agencies would do well to keep in close touch with TVA studies and research on the all important subject of rates and allocation of functions in the field of transportation.

The activities and accomplishments of the Tennessee Valley's Waterways Conference will be of vital concern to the state planning agencies in the Valley states.

Flood Control Operations

Purpose of Program

The purpose of this program is to "control destructive
floodwaters on the river system of the Tennessee Valley by whatever combination of multiple-purpose and single-purpose projects that will provide the maximum amount of flood control consistent with the costs involved."

In its uncontrolled state the Tennessee River System was subject to violent and frequent floods during the months of January, February and March. These floods covered farm lands and parts of cities and towns, and contributed toward the flood conditions on the Ohio and Mississippi Rivers.

TVA Department Responsible for Program
Water Control Planning Department.

Cooperating Agencies
U. S. Weather Bureau and U. S. Geological Survey cooperate in securing rainfall and run-off records. TVA contributes funds to the USGS for the maintenance of additional gauging stations for recording run-off data. TVA cooperates with the U. S. Army Engineers in releasing water from the Tennessee River at Kentucky Dam. On studies of flood control of the French Broad River TVA works with the North Carolina State College Extension Service, County Agents in North

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Carolina, the Appalachian Forest Service Station, the
Virginia Polytechnic Institute Experiment Station, the
North Carolina State Highway Department, and the Flood
Control Committee of Asheville.

In a study of the Chestuee watershed TVA works
with the extension service of the University of Tennessee
and with county agents in Tennessee.

Annual Expenditures

<table>
<thead>
<tr>
<th>Year</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
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<tr>
<td>1945</td>
<td>$39,278</td>
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</table>

Accomplishments

For the purpose of controlling floods--two distinct
kinds of reservoirs have been provided in the river system
as follows:

Storage Reservoirs--This type of reservoir, which
occurs at the mouth of all tributaries of the Tennessee, so
far as may be practicable retains the entire flood flow during
individual flood periods. Norris Reservoir is a typical
storage reservoir.

River Dams or "Major River Projects"--These are de-
signed principally to fulfill navigation requirements. These
reservoirs have storage for flood water between the minimum
level necessary for navigation and the maximum level as fixed
by the height of the dam and spillway gates.

This system was tested in 1937 by one of the worst floods in history. Chattanooga, the key point in the whole flood control system and the city most susceptible to damage by floods (because of the narrowness of the valley at that point), suffered damage to the extent of $40,000 as compared with damage estimated at $10,000,000 received under similar flood conditions in years before the dams were built.

In addition to the construction of major storage and river dams, where a regional problem is involved, the flood control program includes supplementary protection for such areas and in such cities as cannot be entirely taken care of by the control of the main river. Such supplementary protection is being studied in connection with the French Broad River, above Asheville, North Carolina, with the thought that an economical group of detention dams above Asheville, together with channel improvements and a levee at Asheville, will help reduce floods on this watershed as well as help to reduce the height of floods on the lower river. Supplementary protection has long been recommended for the City of Chattanooga. A TVA report covering the investigations and studies of this problem was submitted to Congress by the President in 1939, recommending local channel improvements by means of excavation, levees, walls, and gates. Present regulations of flow in the Tennessee River would protect the
city from the maximum flood on record, but would not provide for the maximum flood that could occur.

The flood control program is also concerned with municipalities on tributaries which are affected by floods but where it is determined that the entire region is not sufficiently affected to warrant large scale control projects. At these locations TVA's contribution is limited to advice and consultation services.

Today the Tennessee is very nearly completely controlled as a system, and it is estimated that the complete system will reduce the Mississippi flood peak at Cairo by 2.5 to 3 feet, depending on the location of the flood producing storm.

Plans for Future

The South Holston and Watauga reservoirs will complete the major reservoir system of the Tennessee Valley. The South Holston Dam is scheduled to be completed in 1949 and Watauga in 1951.

The channel improvements and levees as proposed for Chattanooga, when built, will provide protection against floods exceeding by more than 50% the worst flood on record.

The problem of flood control on a small rural watershed will be studied by means of an intensive experiment on the Chestuee Creek watershed of about 85,000 acres. This experiment will investigate such aspects of the problem as
the most effective administrative and cooperative methods of encouraging the interested land owners and public agencies to adopt a unified program "to reduce flood damages and increase the productivity of the area. An equally important part of the experiment will be to demonstrate conclusively the most applicable methods of soil conservation, reforestation, and the expedients for effectively alleviating flood damage in small rural watershed areas."  

TVA and the University of Tennessee are to provide technical guidance and TVA is to contribute certain engineering works and materials.

It is expected that the results of this experiment will do much to improve the social and economic status of the watershed, and that its findings will lead the way to a comprehensive cooperative approach in similar areas throughout the valley.

While such programs which encourage conservation of water resources will undoubtedly improve the local situation in the Valley, and will contribute toward a "slower run-off" and therefore aid in flood control, it should be borne in mind that such measures may not appreciably lessen the danger in times of record floods. The worst recorded flood in the Tennessee Valley, in 1867, occurred before these

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4. Quoted from Analysis of TVA Reservoir Development Program.
lands had been denuded of forests and before the early
farm management practices had gone far in soil destruction.

State Activities

Since flood control and navigation have always been considered federal responsibilities, state agencies, including state planning agencies have not concerned themselves with these programs except insofar as they have touched upon agricultural and community planning problems. State planning boards will be concerned with the progress of the Chestuee Creek experiment mentioned above as an example of coordinated planning and administration at the local level and in a rural area.

Stream Sanitation Investigations

General Purpose

In collaboration with federal state and local agencies and industries, TVA classifies streams according to measures of pollution and standards of relative purity, promotes action in the field of stream sanitation, and furnishes technical assistance on pollution abatement to municipalities and industries which now pollute the Tennessee River system.

TVA Department Responsible

The Health and Safety Department is responsible for
stream sanitation investigations in collaboration with the following:

The Design Department
The Water Control Planning Department
The Department of Chemical Engineering
The Department of Forestry Relations
The Regional Studies Department
The Commerce Department
The Legal Department
The Departments of Power.

Cooperating Agencies

U. S. Public Health Service and state health departments cooperate with TVA on general surveys of pollution conditions of the Tennessee River and its tributaries. At one time the Public Health Service detailed two sanitary engineers to TVA and provided a mobile laboratory.

In Tennessee TVA is cooperating with the Departments of Public Health and Conservation and with the State Planning Commission.

In North Carolina the following state agencies are working with TVA: the Department of Conservation and Development, the Department of Agriculture, and the Planning Commission. The Authority is also in touch with the United States Geological Survey, the Institute of Textile Technology (concerned with problems of stream sanitation), the National

Annual Expenditures

<table>
<thead>
<tr>
<th>Year</th>
<th>Type</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
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</tr>
<tr>
<td>1947</td>
<td>Estimated</td>
<td>$126,000</td>
</tr>
</tbody>
</table>

Accomplishments

TVA's stream pollution program was begun in 1935 when the Authority suggested that the state sanitary engineers from each state meet to discuss the problem. At that time little was known about existing conditions and TVA was asked to study them.

These studies have been going on for the past ten years to determine major sources of pollution. The work to date has centered around defining the problem and a start has been made toward developing remedies for reducing and controlling domestic and industrial wastes.

While very little progress has been made to date on the actual elimination of pollution, a number of steps have been taken toward this end through working agreements with the states of Tennessee and North Carolina. Assistance has been given to communities in the development of postwar plans for sewage treatment. In Tennessee, part of the Holston River has been selected for the first concentrated
effort on solving the problem. Progress to date is as follows: the city of Kingsport has employed an engineer, TVA has supplied a trailer laboratory and analytical service, and the city provides sampling service; Bristol is ready to employ an engineer; Johnson City is giving favorable consideration to active participation in this program; Elizabethton has not so far given indication of willingness to work with the other communities. Major industries in the area have been approached by TVA and state representatives with varying degrees of success. Textile and paper industries are favorably disposed toward the program. Certain industries, however, hesitate to permit government officials to investigate their manufacturing processes. The TVA Department of Chemical Engineering is prepared to help develop economic uses for industrial wastes, so that the cost of waste treatment may be partially recovered. Although devices of education and demonstration are being used to encourage communities and industries to recognize their responsibility and to become actively interested in correcting the offending conditions, there is a recognized need for promotional work along these lines.

Plans for the Future

First and foremost on the list of future plans is the organization of a long range program of promotion to eliminate pollution. The first step will be the preparation
of a manual setting forth in laymen's terms a method of
procedure by which a community may organize itself to bring
about a solution of its problems in stream sanitation. Plans
also include extension of cooperative agreements to the
Valley states of Virginia, Alabama, and Georgia in order
that the influence of state agencies may be brought to bear
upon the problem. While research will give way, to a large
extent, to programs for action, additional studies will be
undertaken where necessary to supplement existing data on
the sources and quantities of pollution, and on the existing
conditions of streams. TVA, in cooperation with state a-
gencies, will establish minimum requirements of water quality
in the Tennessee River system, giving attention to such
factors as the existing and potential needs of the area as
to stream flow, condition of the water before receiving pol-
lution, and rates of purification. TVA and the cooperating
agencies will then recommend the extent of reduction at in-
dividual sources of pollution.

TVA - State Relationships

In view of TVA's present program which emphasizes
action, it would seem that the state planning agencies in the
Valley, in collaboration with the state departments of public
health, could do much to further stream sanitation programs,
particularly in the preparation of promotional material on
the subject.
While the two most active planning agencies in the Valley feel that they should lend their resources and their support to further the cause of stream sanitation, work in this field has been limited to a bulletin which is being prepared by the Tennessee State Planning Commission on local action required to construct sewerage and water works. It is recommended that state planning agencies, state public health officers, and TVA work together on the drive for action on stream sanitation.
AGRICULTURAL RESOURCE DEVELOPMENT

The many activities of TVA's programs in agricultural resource development are tied together on the federal, regional, and state levels by means of a contractual relationship between the U. S. Department of Agriculture, TVA, and the land grant colleges. The basis of this joint program is a memorandum of understanding between the land grant colleges of Kentucky, Virginia, Tennessee, North Carolina, Mississippi, Alabama, and Georgia, the U. S. Department of Agriculture, and TVA.

This general agreement provides for the establishment of a correlating committee to which a representative of the Department of Agriculture, a representative of the agricultural colleges, and a representative of TVA are appointed. The committee meets twice a year to consider the administration of the Valley program of agricultural development. At the same time the correlating committee meets, conferences are held at which the deans and directors of the experiment stations and extension services, and technical representatives of the Department of Agriculture are present.

At these meetings, which are known as the Valley States Conference, the administrative as well as the technical
aspects of the joint program are discussed. Within recent years sub-committees have been created to deal with special aspects of the program. The administrative set-up of this conference is explained on the following page.

Fertilizer Demonstrations and Farm Management Assistance

Purpose

In cooperation with the state extension services, county agents, farm communities and associations, and individual farmers, this program provides tests and demonstrations of improved fertilizers or plant nutrients, sets forth the objectives of watershed protection, and encourages the development of sound farming practices as part of comprehensive regional development. It embraces shifts in agriculture which give the farmer a wider choice in land use based on increased and diversified crop and livestock production on the better lands, and permits proper use of soil suited to other purposes such as timber growing.

TVA Department Responsible for Program

Department of Agricultural Relations.

Agencies Cooperating with TVA--

Land grant colleges.

U. S. Department of Agriculture

Land grant colleges in 20 states have been reimbursed for added personnel required in the supervision of the test-
VALLEY STATES CONFERENCE

USDA    TVA    VALLEY STATES LAND GRANT COLLEGES

To coordinate those phases of research, extension, land use planning, and educational activities of those agencies which are related to a unified regional agricultural program.

Correlating Committee
made up of one representative each from
USDA    TVA    LAND GRANT COLLEGES

The committee may, when such employment seems desirable, employ an Executive Secretary to be financed by any of the agencies involved or by two or more of them jointly.

Executive Secretary
Ex-officio member of
all committees.

Committee on Organization
Committee on Research
Committee on Extension and Resident Teaching
Committee on Resource Utilization
Committee on Cooperatives

Each committee elects a chairman and a correlator.

NOTE: The Valley States Conference has met twice a year since 1933 at various cities in the Valley States. The attendance at the April 1946 meeting consisted of the following: 10 representatives from the state colleges, including deans of agriculture, directors of extension service and directors of experiment stations; 10 representatives from TVA's Agricultural Relations and Forestry Relations Department; 3 representatives of USDA--consisting of the Assistant Secretary of Agriculture, the Assistant to the Chief of BAE and the Assistant Director of the Extension Service; and 3 correlators.
demonstration programs.

Annual Expenditures and Budget Allowances

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</thead>
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<td>1946</td>
<td>$755,000</td>
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<tr>
<td>1947</td>
<td>$755,000</td>
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TVA Accomplishments

During the fiscal year 1945--34,890 active farms were participating in the test demonstration activities, 3,808 of which were participating for the first time. Of the total 14,819 were unit test-demonstrations, set up by individual farmers, while 20,071 were included in test demonstration areas. As of June 30, 1945 a total of 51,238 farms comprising more than 7 million acres had participated in test demonstration activities at one time or another since 1935. These farms were located in 30 states. On the basis of readjusted farm plans, prepared with the guidance of agricultural extension personnel of the states, they had received TVA products such as concentrated phosphates, ammonium nitrate and aqua ammonia. Although there is widespread participation throughout the United States, the test-demonstration activities are intensified in the valley because of its relationship to TVA and the need of controlling runoff and erosion as a supplement to the program of water control in the rivers, because of necessary readjustments re-
sulting from the construction of TVA dams and reservoirs. These readjustments include those of displaced families, problems arising from loss of reservoir lands from agricultural production, the availability of cheap power, and the resultant increase in industrial activity and density of population. The most telling record of accomplishments appears in the case histories of some of the test demonstration farms. Careful records of before and after conditions have been kept, and the results of TVA fertilizers and improved farm management practices—in terms of increased yield and improved economic conditions among the farmers are impressive.

In 1935 the community of Pond Springs in North Georgia organized to take part in a TVA-sponsored program as a community test demonstration area. 182 of the 200 farms in the area are participating. The results show reforestation of eroded areas, improved farm management practices by removal of row crops from steep hillsides, increased soil productivity, increased quantity and quality of livestock, better community organization and increased use of farm machinery.

Plans for the Future

It is estimated that approximately 40,000 farmers will participate in the test demonstration program in 1947—of whom almost three-fourths will be in the Tennessee Valley.
Controlled Soil and Fertilizer Investigations

General Purpose of Program

Research, testing and development is conducted by chemists, agricultural experts, agricultural engineers, and others for the following purposes: to test the efficiency of various sources of phosphatic fertilizers; to determine crop response to the application of phosphates on various soils; to ascertain the relative value of nitrogenous fertilizers, including ammonium nitrate, aqua ammonia, and anhydrous ammonia, and to work out mechanical problems involved in the distribution of both forms of ammonia; and to test the relationships between soil conditions and human nutrition.

TVA Department Responsible

Department of Agricultural Relations

Agencies Cooperating

TVA cooperates by contractual arrangement with the Valley land grant college experiment stations, thus taking advantage of existing facilities and strengthening the programs of these institutions. A research committee representing the Valley experiment stations has been established to make sure that the research of each of the Valley stations is properly coordinated and does not duplicate the work of other stations.
Annual Expenditures and Budget Allowances

<table>
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<tr>
<th>Year</th>
<th>Type</th>
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<td>$132,000</td>
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</table>

Accomplishments

Eleven years of tests have proven that triple-superphosphate has substantially the same efficiency per unit of plant food as ordinary super-phosphate, as well as advantages in low costs of handling, bagging, and transportation resulting from higher concentration. Tests on fused tricalcium phosphate (now being produced in quantity at the new TVA plant at Godwin) have shown that the material may contain as much as 0.4% of florine without affecting availability of phosphorus to plants, while the presence of 0.1% of florine (and possibly up to 3%) is not harmful to animal growth or reproduction when the material is used as a mineral feed supplement. Tests have shown that TVA's ammonium nitrate is a desirable source of fertilizer nitrogen.

Plans for Future

The program for the future consists of testing of potassium metaphosphate and other new materials; continuation of tests of fused tricalcium phosphate to determine the degree of florine removal necessary for satisfactory use of the product as an animal-feed supplement; and continuation
of tests with aqua ammonia and anhydrous ammonia as sources of fertilizer nitrogen, particularly with respect to mechanical problems involved in handling these new solid products.

According to TVA's analysis of its resource development programs (1945), the following research projects are underway at the Valley experiment stations for the Tennessee Valley Authority.

1. Efficiency and suitability of various TVA phosphates.
2. Effect of fluorine content and particle size in availability of fused tricalcium phosphate, as referred to above.
3. Value of calcium silicate slag (by-product) as a liming material.
4. Response of various crops to different rates of phosphate application.
5. Fertilization experiments with pastures.
6. Effect of sulfur additions to a high-analysis phosphate.
7. Chemical and physical properties of soils in the Valley.
8. Relation between fertilization and mineral content of forage crops.
9. Human nutrition studies on phosphorus deficient soils.

11. Fertilizer tests with various sources of nitrogen produced by TVA including ammonium nitrate, aqua ammonia, and anhydrous ammonia.

**Soil Inventory and Mapping**

**General Purpose of Program**

The work of this Division consists of classification of soils in the Tennessee Valley into numerous categories on the basis of such natural features as stoniness, slope, geographical position and drainage, extent of erosion, plant food depletion, and productive capacity and potentialities. These data are made available to the agricultural workers in the states and counties comprising the region, and are helpful in evaluating the productive capacity of individual farms and determining the suitability of the land for various types of farming, in ascertaining the various types of soil within a given area, in selecting test-demonstration farms so as to ensure representativeness with respect to the various types of soils, and in applying test-demonstration results to other farms with like soil types.

**TVA Department Responsible for Program**

Department of Agricultural Relations.
Agencies Cooperating

The United States Department of Agriculture (Bureau of Land Industry) and the land grant colleges both work with TVA on this activity. TVA reimburses the Bureau of Plant Industry and the state agricultural experiment stations for actual field work, assembly of data, and preparation of reports.

Annual Expenditures and Budget Allowances

<table>
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<tr>
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<tr>
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<td>Estimated</td>
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</tr>
</tbody>
</table>

Accomplishments

54 counties in the Valley have been surveyed, representing approximately 26,000 of the Valley's 41,000 square miles. Mapping has been completed in the Valley counties of Georgia, Mississippi, Kentucky, Virginia and most of North Carolina.

Plans for Future

To complete the work in North Carolina, Alabama and Tennessee. In the two latter states there is an estimated 14,000 square miles to be mapped and surveys to be completed in 4 to 5 counties.

State Activities

As noted under state planning activities the
Alabama State Planning Board is utilizing the USDA soil inventory in preparing land capability maps for use in county development.

**Development and Demonstration of Farm Equipment**

**General Purpose of Program**

As a result of the shift from row crop type of farming to a more diversified program, new types of farm equipment were needed. Most farm equipment had been designed for use on the large, commercial-type farm and the needs of the little farmer had been largely overlooked.

This situation created a need for a program of farm equipment research in cooperation with the Valley experiment stations of the land grant colleges. Emphasis is placed on education and demonstration of new types of farm machinery and electric farm equipment conducted by the state extension services in the Valley.

The work of this Division may be summarized as follows:

**A. Research and Development**

1. Studies on present equipment
2. Studies of new uses for present equipment

   Examples: Use of electric light bulbs for heating hotbeds; electric fans for haydriers
3. Development of new equipment
   Examples: Trailer threshers and other items described below

4. Service enterprises
   Example: Wiring and lighting for farmsteads

B. Education and Demonstrations
   1. Work with extension services of land grant colleges
   2. Short courses for county agents at agricultural experiment stations
   3. Demonstrations of farm machinery
   4. Community activities
      Example: High school children are taught how to operate freezer lockers

This program has not undertaken research and development on certain items such as home freezer lockers where it is felt that private industry is doing a satisfactory job.

TVA Department

Commerce Department

Agencies Cooperating

TVA makes payments to land grant college experiment stations for farm equipment research.

Annual Expenditures and Budget Allowances

<table>
<thead>
<tr>
<th>Year</th>
<th>Category</th>
<th>Amount</th>
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Accomplishments

Several major items of farm equipment and machinery have been developed and effectively demonstrated. The items include a low-cost barn haydrier, over 250 installations have been reported, and a trailer-thresher suitable for hill areas not serviced by conventional threshers, thus encouraging the growing of grains, legumes and grasses. As of January 1945 a total of 215 of these machines had been manufactured by private industry. 50 electrically heated sweet potato curing houses are in operation on Valley farms. 50 low-cost portable irrigation systems, introduced to meet special cropping problems are in operation with resulting production increases up 50 to 100 percent. After experimental development some 4000 home dehydrators were built or purchased by individuals in 1943. Approximately 50 community dehydrators are now in operation (mostly in northern Georgia). About 3,000 electric brooders, on which TVA began educational work in 1937, were installed in 1944. Electric hotbeds, seed scarifiers and hillside seeders were also developed.

Plans for the Future

Further research will be conducted on equipment for processing farm crops including barn haydriers; home and community dehydrators; equipment for haydrying and sweet potato curing; equipment for production of soil conserving
crops, including irrigation equipment, greens harvesters, electric tractors and other electrical farm equipment; equipment for sub-surface application of fertilizers to pastures and for direct application of anhydrous ammonia to the soil as fertilizer.

**Development of Processes and Markets for Agricultural Products**

**General Purpose of Program**

The purpose of this program is to conduct research on food processing and preservation, to coordinate this research with changed patterns of agricultural output, and to extend assistance in this field to industry, including cooperatives.

**TVA Department Responsible for Program**

Commerce Department

**Agencies Cooperating**

The land grant colleges of the Valley states cooperate with TVA in distributing technical and advisory information to enterprisers planning freezer-locker plants in the Valley and by conducting research.

**Annual Expenditures and Budget Allowances**

<table>
<thead>
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<th>Year</th>
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</table>
Accomplishments

Cooperative research agreements have been effected with the following:

Chickamauga Producers, Incorporated, of Dayton, Tennessee. Experiments were conducted to determine what fruits and vegetables could be grown by the local farmers which could be utilized in this company's freezing plant. The company agreed to supervise the planting, growing and harvesting of these crops and TVA agreed to experiment with methods of processing at the TVA floating foods laboratory.

Georgia Agricultural Experiment Station. The floating laboratory was used to check findings of the station particularly in the syrup blanching of apples and the sulphur dioxide preservation of apples.

U. S. Department of Agriculture. The Bureau of Agricultural and Industrial Chemistry of USDA has offered full cooperation, particularly with reference to getting into production products and processes developed at the regional laboratories.

Food processing research is carried on by TVA in collaboration with the University of Tennessee and the Georgia Agricultural Experiment Station. The need for re-
adjustments in the agriculture of the Chickamauga and Watts Bar areas, brought about by the flooding of the bottom lands, prompted a program to aid the farmers. New crops and new varieties were tested. Educational work in improving the efficiency of the culture and marketing of present crops was undertaken, and work was carried on with a farmers cooperative in processing and marketing farmer grown products.

Experiments were carried on to test acceptability of twenty-five frozen preheated or unheated fruits, nine vegetables, and nine pre-cooked meats.

Administrative and technical assistance has been made available to food processing industries and to locker plants.

TVA's greatest contribution has been the maintenance of a floating food processing laboratory as a pilot plant to determine the feasibility of processing a number of new food crops not now produced commercially in the area.

Plans for Future

Studies, begun before the war, will be resumed on the immersion method of freezing foods in an effort to develop a more satisfactory immersion machine. Experiments will be undertaken to determine the optimum conditions for blanching of fruits and vegetables, the effects of storage temperatures on foods frozen under various conditions, the
consumer-acceptability of frozen pre-cooked foods, and the most desirable method of preparing meats for freezing.

**Rural Organization and Cooperative Development**

**General Purpose of Program**

The program is organized to advise and assist farm groups and cooperatives in connection with problems of cooperative management; to make studies and analyses for farm groups who are interested in identifying developments and economic opportunities available to cooperatives; to assist in strengthening cooperative organizations so that they will have every reasonable opportunity for success; to guide these associations while they are developing and help them to operate in accordance with good business practices; to encourage them to obtain advice about applicable legal requirements; to stress the necessity of sound financing and to help them to learn to function in accordance with established cooperative principles.

**TVA Department Responsible for Program**

Department of Agricultural Relations.

**Agencies Cooperating**

Consultant services are made available to extension services of the Valley states.
Annual Expenditures and Budget Allowances

1945 Actual $87,067
1946 Estimated $138,000
1947 Estimated $138,000

Accomplishments

During the fiscal year 1945 TVA provided varying degrees of assistance to about 75 cooperatives in pointing up specific opportunities for cooperative action, advising and assisting local groups in organizing and in management assistance. In Tennessee a federation was forming of over 50 local associations. In the Valley portion of Kentucky a cooperative federation was formed in 1945 directly as a result of the agricultural changes taking place brought about by the test demonstration program. Services by the federation of 7 county associations have been expanded to include the handling of superphosphate and mixed fertilizers, farm supplies, and the operation of terrace equipment. Certain cooperatives are pioneering in making available purebred seeds, liming material, fertilizer and other supplies. Based on the price of lime in 1935, two cooperatives, one in Alabama and one in Kentucky, saved patrons half a million dollars on that material in a decade. A county cooperative obtained $10,000 additional for its members in marketing potatoes. Another processed locally-grown grain into mixed
feeds for its members at a considerable saving.

With TVA technical advice and assistance an agreement has been made between the Tennessee Valley Fertilizer Cooperative (a federation of county cooperatives in Alabama) and the Indiana Grain Cooperative, looking to the importation of grain by water shipment from the Midwest. By providing an economical source of grain, the arrangement holds promise of advancing watershed protection by permitting the shift of corn raising to corn-belt lands better suited to its production.

The history of the development of the cooperative movement is as fully punctuated with failures as is the history of private business. Efficient management is all important, and the lack of it is the most common cause for collapse. TVA's management advisory assistance can do much to strengthen the cooperative movement.

Plans for the Future

TVA will continue to encourage group action through private organizations of farmers, and for the benefit of the public, will stimulate education in the cooperative movement at all levels of instruction. A study will be made of courses of instruction in the cooperative movement now being given in colleges of agriculture, with a view toward making them a more vital part of the curriculum.
State Activities

To date the state and county planning agencies have indicated little interest in cooperative enterprises.
Government activity in the field of forestry began in 1905 when Gifford Pinchot organized a federal forest service to take care of the publicly owned forests on the 175 million acres of land Grover Cleveland had set aside for the public domain. The forestry movement was further stimulated by the founding, by Gifford Pinchot, of the first school of forestry in the United States at Yale University. Pinchot's policy was to develop a strong federal forest reserve, and he succeeded in this direction, but his lack of interest in state and county organization in forestry has resulted in highly centralized forest administration.

State forestry activities generally operate under the state departments of conservation, along with the division of parks and recreation and fish and game. The state agricultural experiment stations, for various reasons, have paid little attention to forestry. Here in the southeast, with over half the farm acreage covered with timber, it is important that agricultural management experts concern themselves with all phases of farm problems. To this end steps are under way to provide a better balanced training for
county agents in the land grant colleges, where heretofore instruction in the principles of forest management have been either meager or non-existent in agricultural curricula. County organization in forestry is limited to fire control and forest protection.

In contrast with Pinchot's policy, TVA wants to start its forestry program with the individual land owner and work up through county and state toward federal organization.

TVA works directly with large woodland owners; with industry in selecting locations for plants (based on locations of concentrations of specific types of trees), and with such agencies as the Tennessee State Planning Commission on resource development reports.

TVA also maintains cooperative agreements with the U. S. Forest Service; the state experiment stations; the U. S. Forest Products Laboratory at Wisconsin, the U. S. Bureau of the Census (for the collection of information), and with the Civilian Production Administration (formerly the War Production Administration).

**Studies of Forest Resources and Management**

**General Purpose of Program**

The TVA Forestry Relations Department studies the extent, location, composition, condition, and ownership of
the forest resource, together with the facts concerning its rate of utilization and depletion in comparison with growth. It determines the fundamental facts concerning sawmill operations and wood-using industries dependent on the forest resources, and investigates problems of fire control, reforestation, and erosion control for soil and water conservation. The Department is also concerned with opportunities for additional income from improved methods of wood utilization as well as from special tree crops and forest by-products.

TVA Department Responsible for Program

Department of Forestry Relations.

Agencies Cooperating

TVA cooperates with the U. S. Forest Service on a Valley-wide inventory of resources and industries; with the Bureau of the Census and the U. S. Forest Service on the annual timber production census; with the Soil Conservation Service in their investigation of erosion control; with the Bureau of Plant Industry in the introduction of new tree species and improved varieties; with the U. S. Forest Experiment Stations, the state forestry divisions and with the state agricultural experiment stations.
Annual Expenditures and Budget Allowances

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<td>1947</td>
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</table>

Accomplishments

For ten years TVA has been collecting data on timber resources and existing industries and is now able to be of considerable assistance to industries as they move into new developments. Demonstrations of good forestry practices are conducted on TVA lands around the reservoir shoreliness where studies in reforestation and improved forest management are also made. Between 1935 and 1942 approximately 1,100 study plots and test plantings were established in cooperation with other agencies on TVA reservoir areas to solve tree planting and reforestation problems and to study effects of various timber cutting practices.

Plans for the Future

The Department will continue to compile further information on the present characteristics and condition of the forest resource and will give special consideration to changes that have taken place during the war. Studies will be made to determine economic uses for waste and for unutilized species of trees. Products other than wood, will
be investigated such as walnuts, plastics from walnut shells, tannin, resins, and other plant materials. Permanent fire protection plans will be developed for TVA areas not now covered, and general reforestation of 600 acres will be carried out in 1947.

Assistance in Forest Management and Reforestation

General Purpose of Program

The purpose of this program is to advise woodland owners on timber harvesting and marketing methods which will guarantee continuing productivity of the resource; to conduct woodland management demonstrations; to assist in the organization of fire control facilities and in enlisting citizen support for better fire protection and to encourage reforestation of eroded or otherwise unproductive land for watershed protection and improved land utilization.

TVA Department Responsible for Program

Department of Forestry Relations.

Agencies Cooperating

Cooperative contracts call for the active participation of state forest and extension services and the landowners in a program of reforestation. Assistance is made available to the several state departments of conservation in
the organization of facilities and enlisting citizens' support in fire protection.

Annual Expenditures and Budget Allowances

<table>
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</table>

Accomplishments

Until 1941 the work of this program was directed toward awakening public interest in reforestation for erosion control, in the rehabilitation of idle lands, and in assisting the states in forest fire prevention and control. The reforestation work was accomplished on a large scale with the help of the CCC.

At the outbreak of the war in 1941, TVA curtailed its work in reforestation for the duration, placed its resources on a maintenance basis, and devoted its effort to stimulating increased production of lumber, pulpwood, and other timber products needed for war use. Working with and through state agencies TVA has encouraged owners of mature timber to harvest and market their products, and at the same time to demonstrate good forestry practices in selective cutting.

In 1943 the Timber Production War Project was established by the War Production Board and the U. S. Forest
Service. This agency urged TVA to carry on and intensify its work, and considerable assistance was given to industry in locating available stumpage, in procurement of equipment, and in meeting war time problems of production. As a result of these activities lumber production in the Valley was nearly 100 million board feet greater in 1944 than at the beginning of the war.

According to TVA Forestry experts, the physical results in acres reforested, in well-managed woodlands, and in sustained-yield operations "already provide an encouraging indication that this country may not need to resort entirely to public acquisition or public regulation in order to protect, develop, and wisely utilize its forest resources."5

Plans for Future

Future plans include the establishment of additional farm woodlands and industrial management demonstrations with increased emphasis on integrating the former type with the agricultural test demonstrations and assistance to the states in extending organized fire protection to additional counties. New fire damage demonstration plots will be established, and renewed emphasis will be given to the educational aspects of forest fire control. Reforestation of eroded, depleted, and idle lands will be reserved. A TVA forester estimates that the value of the Valley forestry business (not including

the value of processed forestry products) is at present $100,000,000 on the basis of a rate of growth of 100 board feet per acre per year. He believes that as a result of the introduction of more desirable forest practices, such as improved control and management, better fire protection, and more careful selecting of material to be cut, the perpetual annual yield could be increased to 300 board feet per acre per year, thereby trebling the income.

TVA-State Relationships

State planning agencies have no direct contact with this particular program although state wide forestry studies will undoubtedly be made in the future in which the state departments of conservation--the state planning agencies and TVA should collaborate.

Development of Processes and Markets for Forest Products

General Purpose of Program

Research is conducted to discover new and improved varieties of forest growth, new uses for forest trees, and new methods of utilizing the products of the woodlands in a way to bring maximum return.

It is important to the Valley economy and to increased local employment that more of the rough lumber and logs now exported to other regions be processed in local in-
dustries. TVA research is devoted to this end.

TVA Department Responsible for Program

Commerce Department.

Agencies Cooperating

Valley state institutions and agencies of research and engineering and the U. S. Forest Products Laboratory at Wisconsin are collaborating on this project. Laminated lumber produced by the TVA pilot plant is tested by cooperating institutions as to strength, performance, stability and cost of production. Much of the research in this program is carried out under cooperative arrangements with Valley institutions and agencies.

Annual Expenditure and Budget Allowances

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Accomplishments

TVA has developed a process for making laminated lumber from local cull timber and has designed, constructed, and operated a pilot plant to perfect, test and demonstrate the feasibility of the process. In 1945 the pilot plant was changed to produce laminated material for finished flooring. Studies have been and are being made including structural
studies of local woods, investigations of new uses of wood, wood waste and the by-products therefrom. Typical research projects are as follows: TVA has developed an efficient method for economical root propagation of straight-stem black locust of superior grade which cannot be reproduced by seed; with the Virginia Agricultural Experiment Station it is conducting a study of the benefits of partial pasture shade from a TVA-developed strain of thornless honey locust having large pods, of high sugar content, which may be valuable as forage; plantings of improved black walnut stock, producing thin-shelled walnuts with large kernels, have been made for demonstration purposes in cooperation with the extension services of several Valley states.

Plans for the Future

Efforts are being made to secure operation of the pilot plant by private industry during the latter part of 1946 in order to obtain production cost data, to investigate production problems arising under conditions of commercial operations, and to obtain data on market demand and price levels by marketing the product through regular commercial channels. Test operation of the laminated lumber pilot plant by private industry will continue in 1947 if necessary and desirable, with such assistance by the TVA staff as may be required. Upon completion of test operations, sale or lease of the pilot plant to a private operator will be
negotiated. It is expected that chemical utilization of wood will provide many important new uses in line with similar developments relating to coal and oil. Much of the research will be carried on under cooperative arrangements with Valley institutions and agencies. Some work, however will be done at TVA's Muscle Shoals laboratories, including chemical treatment of lignin as a carrier of plant foods, and production of essential oils from cedar wood and cedar leaf, and pine needles.

TVA-State Relationships

Industrial development divisions of state planning agencies maintain contact with TVA in connection with the work being carried on under this program.

Fish and Game Investigations

General Purpose of Program

TVA, in cooperation with state conservation departments, and the U. S. Fish and Wildlife Service, undertakes basic studies regarding the characteristics of impounded waters and the reactions of fish populations to their surroundings. The studies include:

1. The composition and size of fish populations.
2. The reaction of different species of fish to new environmental conditions.
3. Creel consensus to determine the volume and quality of the catch with special reference to the effect of state regulations.

4. Growth rate studies.

5. Life history studies.

Similar investigations and studies are necessary for the full development of migratory waterfowl and the fur-bearing animals which frequent the reservoir margins. TVA's primary objective is the development of opportunities for the optimum utilization of these resources.

Agencies Cooperating

The conservation departments of the Valley states are making full use of the findings of these investigations to develop fish and game resources through sound conservation practices. The fish and game divisions of Alabama, Kentucky and Tennessee and the U. S. Fish and Wildlife Service are cooperating with TVA in establishing necessary refuge areas as well as providing opportunities for hunting ducks and geese.

Annual Expenditures of Budget Allowances

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</table>
Accomplishments

During the war TVA efforts were designed to assist in increasing the utilization of fish and game resources for food. Recently the conservation departments of Tennessee, Alabama, Georgia, Mississippi, North Carolina and Kentucky opened all but two of the TVA reservoirs in the respective states to all-year-round fishing. This action, taken upon recommendation of TVA after extensive biological investigations centered on Norris Reservoir, demonstrated that most of the greatly increased fish population was not being adequately utilized. Commercial fishing for non-game fish has steadily increased in TVA reservoirs and has been stimulated by war demands and increased prices. Development of commercial fishing has been encouraged as a growing industry and also as a means of keeping the population of rough fish, such as carp, in proper balance with the more valuable game fish. Last year the Alabama legislature, following TVA recommendations, passed an act permitting netting of commercial species of fish in the TVA reservoirs in that state.

Plans are being completed with the U. S. Fish and Wildlife Service for setting aside portions of Kentucky Reservoir in Tennessee as a natural wild life refuge, to be administered by the Service. Further possibilities for refuge and shooting areas were being explored in the reservoirs of northern Alabama where the Wheeler National Wildlife Refuge
of 40,000 acres was established several years ago. An agreement has been reached between the Wildlife Service and TVA for transfer of 49,520 acres between the Big Sandy and Duck River embayments and at Busseltown, Tennessee, for a proposed Tennessee National Wildlife Refuge. The TVA will carry on activities on the land necessary to discharge its responsibilities, while the Fish and Wildlife Service will conduct and supervise measures for the propagation of wildlife.

Transfer of 9,280 acres of TVA land along the eastern shore of Kentucky Reservoir in Kentucky to the U. S. Fish and Wildlife Service has been completed and the land was incorporated into the Kentucky Woodlands National Wildlife Refuge, which is stocked with a large number of wild turkey and a herd of Virginia white-tailed deer.

Plans for the Future

Fish and game investigations in the enlarged water areas of the Valley will be conducted.
MINERALS RESOURCE DEVELOPMENT

As part of its development program TVA is concerned with helping the people of the region to achieve the best utilization of minerals in relation to their other resources.

The Valley is rich in a large variety of minerals, but with the exception of coal, limestone and clay, the deposits of these minerals are small and scattered. Before TVA was established, minerals in their raw state were shipped away to be processed elsewhere. TVA chief concern has therefore been to encourage local processing and manufacture so as to retain in the region as much as possible of the increased value. The availability of inexpensive TVA power will be a major factor in stimulating local processing and manufacture.

Another objective has been the development of outlets for minerals located adjacent to the new waterway.

Geological and Field Investigations

General Purpose of Program

Geological and field investigations are conducted. Information is secured on all kinds and quantities of minerals
in the region available for commercial use, and assistance is given to mineral and industrial operators concerned with the utilization of Valley minerals.

**TVA Department Responsible for Program**

Commerce Department.

**Agencies Cooperating**

The Bureau of Mines assists in developing and appraising the results of TVA's mineral investigations, and the U. S. Geological Survey collaborates with TVA in the mapping of certain mineral deposits.

**Annual Expenditures and Budget Allowances**

On total mineral resource development program.

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**Accomplishments**

Field study and investigation of a number of mineral deposits has produced the following results:

**Sillimanite** - This material, available in northeast Georgia, can be concentrated in coarse sizes, suitable for processing with refractory brick. It has not been used in the past because of not being available in sufficient quantity.
Massive Kyanite - Discoveries of commercial quantities of this high quality, heat resisting material (valuable in the manufacture of brick), unknown in this country, led to an initial shipment of Georgia massive kyanite to a Missouri fire brick company during the past year. This material is usually imported from India. The discovery was made by TVA and Georgia geologists. The Geological Survey reviewed the findings, and the U. S. Bureau of Mines conducted research on improvement and use.

Mica - Large quantities of green mica have been produced by North Carolina mines, and recent investigations with Bell Laboratory equipment have indicated that properly graded and tested, it is equal to ruby mica. After consultation with mica producers, fabricators, and consumers, arrangements have been made for a series of electrical tests to be made by TVA, the North Carolina State Department of Conservation, and the United States Geological Survey on samples collected by the Survey from North Carolina, Virginia, and Georgia. One of the several areas near Spruce Pines, North Carolina, investigated by TVA at the request of the North Carolina State Department of Conservation, is now in production.

Vermiculite - Investigations are underway with state institutions and with vermiculite users to extend the use of vermiculite, which TVA surveys helped bring into
production a few years ago.

Olivine - A pilot plant is being operated at Muscle Shoals to test a process for the production of magnesium, a metal lighter than aluminum, from olivine rock, formed in large quantities in the Valley. About 600 pounds of magnesium of commercial purity was produced and the workability of the process was established. Studies of the economics of the process indicated that a magnesium industry in the Valley would have costs comparing favorably with those of good existing magnesium installations.

Feldspar - Acting upon TVA information as to production possibilities, a North Carolina feldspar company opened a new mine near Bryson City. As a result of TVA reconnaissance, an investigation is planned by the TVA, the U. S. Geological Survey, and the N. C. State Department of Conservation, to determine the extent of feldspar reserves in the area. A feldspar milling company, on the basis of findings so far, has installed an additional grinding unit handling 1000 tons monthly.

Limestone - Reconnaissance surveys for agricultural and industrial limestone revealed a number of possible quarries located adjacent to the river or other transportation facilities.

Titanium Ore - A thousand acres of this rutile bearing ore, in demand for welding and coating and other uses,
were mapped in North Carolina and Georgia.

Plans for the Future

In 1946 and '47 mineral surveys will be undertaken to determine the possibilities for commercial development of the mineral resources of three areas in the Valley. Studies will be undertaken to determine the quantity and quality of such deposits as coal, barite, lead, zinc, iron, manganese, silica, feldspar, and other minerals. Technical assistance will also be given to established or prospective industrial operators. This assistance will be channeled through state geology divisions and departments of conservation.

Laboratory and Process Development

General Purpose of Program

Known process steps used in ore dressing, extraction, smelting, and product recovery are tested with specific ores, and new or improved processes are developed. Because of impending exhaustion of higher grade ores in the nation, development of processes utilizing low-grade materials is of strategic importance. Research is conducted to develop techniques and processes that can be used by small industries.

TVA Department Responsible for Program

Commerce Department.
Agencies Cooperating

TVA and U. S. Bureau of Mines are under contract by which TVA furnishes the Bureau's electro-technical laboratory at Norris. In turn the Bureau keeps TVA posted on its work and devotes one-third of its program at Norris toward TVA projects.

TVA maintains a cooperative agreement with North Carolina State College for the establishment of a minerals testing laboratory at Asheville, North Carolina.

Annual Expenditures and Budget Allowances

See statement under Geological and Field Investigations.

Accomplishments

Minerals research has been conducted at TVA's Muscle Shoals laboratory relating to the development of new or improved processes for the improvement and use of minerals of the Tennessee Valley area. During 1945 work was concentrated on the development of processes for the electric-furnace production of aluminum-silicon alloy and a process for the production of magnesium for olivine. Data obtained from experimental study of the process in pilot-plant production were sufficient to permit design of a full scale plant and fairly accurate estimates were obtained of the operating characteristics and production costs of such
an installation. The magnesium-from-olivine pilot plant was operated during the year and approximately 600 pounds of metallic magnesium of commercial purity were produced.

Plans for the Future

An evaluation of the aluminum-silicon alloy process will be completed and an experimental investigation will be carried out involving new and improved methods for the electric-furnace processing of various minerals of the Valley area. These investigations will take account of the abundant low-cost power to produce alloys, particularly alloys of the light metals such as aluminum, beryllium, magnesium, and silicon. Such work will be done in a scale adequate to determine the technical and economic feasibility of the processes. It is expected that the alloys will find uses as structural materials in the manufacture of steel, and in other metallurgical processes. A comprehensive evaluation of the process for the production of magnesium from olivine will be made in 1946. An experimental investigation of the fusion of minerals in electric furnaces to produce refractories and other useful industrial products will be undertaken in 1946 and continued during 1947. Fused refractories of alumina and magnesia for use at extremely high temperatures are now produced commercially by this method. The production of refractory materials of new and improved composition from raw materials available in the Tennessee Valley
will be studied. Such products may be useful in lining furnaces and other industrial equipment to be operated at exceptionally high temperatures and under corrosive conditions.

TVA-State Relationships

The industrial development divisions of state planning agencies are following closely the work of this program.
As Lewis Mumford has pointed out, Americans are worshippers of monuments. Give them an opportunity to commemorate themselves or their activities in stone and mortar and they will take it. Hence our "modern" schools, post offices, and other public institutions--modern--in the historic sense, if not always from the architectural point of view. Any mayor or public official likes to have his name perpetuated on a corner stone. And so we have monuments, usually in the form of buildings but sometimes in the form of other public works projects such as parks and playgrounds.

Wealthy patrons of private as well as public schools and colleges will contribute anything from $100,000 up for a building. But appeals for one tenth of this sum toward less tangible but frequently more vital needs, such as funds with which to pay better salaries to better teachers, are generally refused.

The same thing is true in recreation. A well designed and well located park or playground may become a handsome monument. But monuments are too often looked at and not used. If public sentiment could be aroused and enthused to provide more adequate support for teachers' sala-
ries and recreation leadership, our school time and play
time might be less well accommodated, but each activity
would become a richer experience for the participants.

TVA has learned the importance of organized
leadership and program planning in recreation and has
established an advisory service for the purpose of en-
couraging organization for recreation, and wise use of
recreational areas at the state, county, and local levels.

Funds for new parks and playgrounds, it is hoped,
will be diverted into supporting this aspect of the recre-
reational program, at least until such time as the need for
these provisions becomes an accepted item of expenditure
in every community.

Unquestionably the day is here, when recreation
will come into its own as one of the major industries of
the Valley.

TVA has laid the ground work and has set the
stage for this development. From now on local committees,
private initiative, and private capital must take over in
the development of pleasant travel facilities and comfortable
and attractive places to eat and sleep.

To this end TVA must devise methods of promotion
and must use such methods and techniques as may be necessary
in order to bring about the fullest development of this rich
resource.
TVA's Recreational Program

General Purpose of Program

The TVA Division of Recreational Relations assists the orderly development and utilization of the lake and scenic resources added to the region as a result of TVA's river development program, and encourages and promotes the development of recreational resources of the Valley states. Advice and assistance is offered to local communities on problems of recreational programs and leadership.

TVA Department Responsible for Program

Regional Studies Department

Agencies Cooperating

Plans for demonstration parks were prepared jointly by TVA and the National Park Service. Construction of the parks was carried out by CCC personnel. TVA, the state departments of conservation and the National Park Service have worked together on an appraisal of the post-war recreation development needs of the Valley.

TVA has entered into agreements with the conservation departments of Tennessee, Alabama, North Carolina, and Kentucky whereby TVA and the departments assist counties, municipalities, groups, and individuals with their plans for the development of the recreational resources of the TVA
lakes. Financial arrangements are not involved except in the case of Tennessee.

TVA has a cooperative agreement with Vanderbilt University providing for research on recreational problems. The first project undertaken was the publication of a paper entitled "The Tennessee Valley-A Recreational Domain."

On the subject of development of recreation as an industry TVA cooperates informally with the Southern Highlands Association, with the North Carolina Travel Council and with local tourist bureaus. TVA offered advice and assistance to Government Services, Incorporated (a non-profit organization of Washington, D. C.) on the conversion of the Fontana construction camp into a public recreational project.

Annual Expenditures and Budget Allowances

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<thead>
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<th>Year</th>
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Accomplishments

It has been TVA's policy to retain in public ownership a sufficient amount of the lake shore property acquired in connection with reservoir development, to provide adequate sites for state, county and municipal parks, group camp sites, landing and picnic areas, boat docks, clubs, and cottage sites.

Public park areas have been leased to 27 public agencies for token payments in each case. There are now com-
pleted or in the process of development 15 group camps, 40 fishing camps and boat docks, and a large number of summer cottages.

As part of its own program TVA maintains pleasure craft channels and harbors on all reservoirs and makes suitable provision for visitors at all dams and powerhouses.

TVA also builds and maintains demonstrations of recreational development and operation, such as Norris and Big Ridge parks and Norris and Chickamauga boat docks. These will eventually be turned over to appropriate public agencies.

The Tennessee state park system which today is one of the most active in the country, grew out of TVA's demonstration parks at Oak Ridge and Norris.

Plans for the Future

By means of advice and stimulation, TVA hopes to encourage county and municipal governments to plan for the intelligent use of park areas leased from TVA. In the past too many of these areas have been sublet to commercial operators who have failed to make the best use of opportunities for recreational development.

For the purpose of promoting the construction of commercial boat docks and resort developments, TVA is considering the possibility of encouraging the development of a series of "glamor spots" throughout the Valley. Locations
would be selected and preliminary plans for these establish-
ments would be prepared by TVA with the hope of attracting
private capital for their construction and private operators
for their management. Advice and assistance to local, county
and state recreation programs will be encouraged with a
view to stimulating the development of recreational opportu-
nities on TVA lands.

TVA-State Relationships

The State recreational divisions are part of the
departments of conservation in the Valley states. The state
planning boards in Alabama and Tennessee look forward to
assisting the state conservation departments in a comprehensive
state-wide study of recreational facilities.
Regional planning—normally thought of as being concerned primarily with the development of natural resources—is becoming increasingly involved with the ever growing complexity and importance of the problems of urban communities.

The towns and cities of the Valley are part of its physical equipment for doing business. They are one of its basic resources. They have a special job to perform, and a job of increasing importance, in view of the rapid rate of growth of urban population. In 1890, 7.5% of the Valley's population were living in urban communities. By 1940 this figure had grown to 24.3%, still well below the national urban population of 56.5%, but rising rapidly.

TVA maintains an Urban Community Relations Staff responsible for encouraging, stimulating, strengthening and promoting the work of the state planning agencies in the Valley states, particularly in relation to urban communities. Recently the staff has brought together representatives of the valley state planning agencies to confer on state and local problems as well as on problems of regional significance.
Another important activity of this staff is its educational program in community planning. This work is organized to stimulate citizen participation in planning and to encourage planning education in schools, colleges and universities, both for the purpose of bringing about a broader understanding of planning, and in order to train professional planners.

The TVA Government Research Staff works with local and state governments on problems of administrative planning involving such matters as readjustment of local services and finances in TVA construction areas, the administration of TVA's payments in lieu of taxes, research programs, and assistance to state and local officials.

Educational Activities in Community Planning

General Purpose of Program

This program endeavors to bring about more active citizen participation in planning to the end that planning in the Valley communities will reflect the ideas and desires of their citizens, and so that plans will be initiated and actually carried out by citizens and local officials working together. It stimulates interest among educational institutions and agencies of the region in the field of education and research in planning, and brings about a clearer understanding among community officials of the importance of
comprehensive planning as an aid to community development.

TVA Department Responsible for Program
Department of Regional Studies.

Agencies Cooperating

In community organization activities TVA is working with the Tennessee State Planning Commission and the Virginia State Planning Board on the state level, and through these agencies with the Washington County Development Association in Virginia and the Civic League in Harriman, Tennessee. Staff activities relating to educational institutions and agencies within TVA are carried on jointly between the Department of Regional Studies, the Educational Relations Staff and the Reservoir Property Department. Educational institutional relationships have been established with the University of North Carolina Graduate Program in Regional Planning, and plans are under way to encourage introductory courses in planning at other colleges and universities in the region.

Another objective of this program will be to encourage closer relationships between state boards of education and planning commissions with a view to stimulating interest in urban planning as a phase of resource use education.

Annual Expenditures and Budget Allowances

Including all advisory assistance to state and
local governments - physical planning, educational and government research activities.

<table>
<thead>
<tr>
<th>Year</th>
<th>Type</th>
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Accomplishments

Educational activities in community planning have been carried forward by means of cooperative experimental assistance in Washington County, Virginia, and Harriman, Tennessee.

The Washington County Development Association was formed by a group of interested citizens in 1944. This association - a non-profit citizens corporation - is charged with both planning and action, and has organized its activities into committees, as follows:

- Executive Committee
- Agricultural Committee
- Industrial Committee
- Schools Committee
- Recreation Committee
- Boards and Utilities Committee
- Publicity Committee
- Government and Legislative Committee

Through the Virginia State Planning Board, TVA is assisting the association in the consideration and organization of its long range objectives for planning and action. Since it was founded the association has been designated by the Washington County Board of Supervisors as the official planning body for the county.
Harriman, Tennessee presents a different picture. Here TVA, in collaboration with the Tennessee State Planning Commission is assisting in the revival of an inactive planning board by means of stimulating citizen participation in community organization. As part of its program to assist in this work TVA has completed its first draft of a manual for assisting agencies in "Citizen Organization for Community Development."

As part of its work in connection with educational institutions, TVA has sent a representative to advise and assist the University of North Carolina at Chapel Hill in making preliminary plans for its graduate program in regional planning. During the summer of 1946, TVA provided the opportunity for the director-elect of this new course to spend 2½ months getting acquainted with TVA operations at Knoxville and Chattanooga and visiting the state planning agencies in Tennessee and Alabama.

Other activities include preliminary negotiations in connection with a planning film to be produced by the Southern Educational Film Production Service, and the preparation in 1941 of a pamphlet entitled "Communities for Living" which was published by the University of Georgia Press for the purpose of stimulating interest in community planning.

Plans for the Future

Future plans consist of continued assistance to
Washington County and Harriman, and the distribution of the first draft of the "Community Organization" manual to these planning committees for demonstration, criticism and comment.

Plans also include preparation of materials for local use, introduction of studies of the urban community into educational curricula, and stimulation of general education on the subject of planning in liberal arts colleges.

**Physical Planning Studies**

**General Purpose of Program**

The purpose of this program is to correlate other TVA programs with urban planning and development in the Valley area and to foster relationships with planning and development agencies at all levels of government in order to encourage and sustain local planning programs and research.

**TVA Department Responsible for this Program**

Department of Regional Studies.

**Agencies Cooperating**

Formal cooperative agreements have been entered into by TVA and the state planning agencies in Alabama, Tennessee, and Virginia.
Annual Expenditures and Budget Allowances

See statement under Educational Activities in Community Planning.

Accomplishments

The Urban Community Relations Staff has been engaged in correlating other TVA programs with urban planning and development in the Valley and in collaborating with other agencies for the encouragement of local planning assistance. Within TVA the work has covered problems of physical readjustment due to reservoir construction, temporary housing for workmen, studies of opportunities for new industrial, recreational and residential development brought about by the new reservoirs, and the planning of new communities, such as Norris, for the housing of TVA personnel. Community studies are undertaken with other TVA departments in stream-navigation, recreation and industrial development. Collaborative studies are undertaken with outside agencies - mainly state planning commissions - on activities classified primarily as educational projects. These include:

1. Exploration of methods for making technicians available to local communities. The Alabama and Tennessee state planning agencies, encouraged and helped by TVA, have developed regional offices for the purpose of lending assistance to local planning commissions.
In Alabama some 20 communities are benefiting from this assistance and in Tennessee nearly 50 communities have received technical advice.

2. Participation in demonstrations in local planning. The purpose of this activity is to work through to completion with state planning commissions a series of typical plans which constitute aspects of local planning. These studies have included such items as zoning ordinances and subdivision regulations, major street plans and recreation plans.

Plans for the Future

Future plans include encouragement of the enactment of local planning enabling legislation in the Valley states where there is no such legislation; collaboration with state agencies on the development of techniques for use in local planning assistance, (such as the "Manual" - referred to above - which is in the process of preparation); the possibility of carrying demonstrations through to the "comprehensive" or "master plan" stage; encouragement of greater correlation between federal and state agencies and local planning agencies, where the programs of the former directly affect urban development; and consideration of the need for research on urban planning problems in the Valley.
TVA - State Relationships

TVA works directly with and through the State Planning Agencies in this entire program.

Governmental and Administrative Studies

General Purpose of Program

This program conducts three major activities as follows:

1. Cooperative assistance to state and local governments
   a) by giving information and advice to operating departments and to policy making officials concerning local governmental problems.
   b) by direct contact with local government officials in connection with payments in lieu of taxes and adjustment of governmental services.
   c) by providing professional aid to local institutions seeking to improve government and administration in the area.

2. Administration of Section 13 of the TVA Act (amended in 1940) relating to payments in lieu of taxes.

3. Internal service assignments with TVA.

TVA Department Responsible for Program

Department of Regional Studies - Government Research Division.
Agencies Cooperating

Although no formal agreements are in effect, as stated above, assistance is given to state and local officials and to organizations on public administration and finance problems. One such organization receiving assistance in developing suggestions for improved state supervision of local finances is the Tennessee Taxpayers Association. The Alabama State Planning Board is receiving advisory assistance on a study of the tax system of Alabama as it relates to resource development. TVA has entered into a cooperative agreement with six state universities for the study of the administration of natural resources. As a result of this cooperative study new bureaus of public administration have been established at the Universities of Mississippi, South Carolina, and Tennessee.

Annual Expenditures and Budget Allowances

See statement under Educational Activities in Community Planning.

Accomplishments

The bureaus of public administration at the state universities of Tennessee, Alabama, Mississippi, South Carolina, Kentucky and North Carolina, whose establishment was encouraged by TVA, are now working on their first study entitled "A Study of State Administration of Resources." The
General Education Board is financing this study, and TVA will coordinate the results. TVA is coordinating municipal surveys of finances and forms of government in Tennessee, Mississippi, Georgia and Alabama municipalities.

A county government study is being made for all states, and an accounting manual is being prepared for counties.

A tax map is being prepared as a demonstration project.

Assistance has been given to specific cities on the financing of sewage disposal works, and a general manual of information is being prepared to assist municipalities in the financing of sewage disposal works.

A report has been completed on Section 13 of the TVA Act dealing with payments in lieu of taxes, and setting forth financial benefits of the TVA program to state and local governments of the region.

Plans for the Future

During 1947 studies will be continued concerning payment in lieu of taxes, the effect of the TVA program on state and local government, and problems of state and local administration relating to TVA activities. The results of these studies, as well as assistance with specific problems, will be made available to state and local officials, and to
institutions in the area concerned with improvement in governmental services.

TVA - State Relationships

The Tennessee State Planning Board through its research division contemplates studies of local and county government in Tennessee, and will maintain close contact with the TVA Government Research Staff.
PROGRAMS FACILITATING RESOURCE DEVELOPMENT

Last but not least in importance comes a group of facilitating programs whose work is closely integrated with the Authority's development activities. These are as follows:

Topographic Mapping

Topographic mapping is only one activity of the TVA Maps and Surveys Division. This division has on its list as partially completed projects:

- Topographic base maps (in the Valley)
- Reservation boundary maps
- Maps of TVA development areas
- Navigation charts
- Silt range surveys

Contemplated new projects of the Division are as follows:

- Topographic base maps outside the Valley covering the whole region actually influenced by the Valley development
- Basic horizontal control surveys
- Survey control bulletins
- County tax maps
- Conversion of government lands purchased for the war emergency
Cooperative Health Work and Public Health Studies

The TVA Department of Health and Safety is responsible for the health of some 12,000 TVA employees. In addition to this responsibility, the Department assists those agencies concerned with the health conditions of the people of the Valley, and in the Valley states, and works with state and local communities on problems of public health education.

Development of Educational Relations

As the TVA program matures, it has come to rely more and more upon the educational process to further its work and to achieve its objectives. The Educational Relations Staff is concerned not only with the education of TVA employees, but in anticipating the needs of employers throughout the Valley, and in advising and assisting educational institutions to the end that they will be prepared to offer the kind of training needed to fit the youth of the Valley to take hold and foster its development. New techniques in vocational training developed by army and navy training courses have been applied in TVA vocational training and are being made available to the region.

Transportation and Industrial Economic Studies

Industrial research and development studies have become a particularly important activity in TVA and in state planning agencies, because of the lack of strong public
agencies at the state and national level primarily devoted to helping business. This lack of a strong public program of assistance to business and industry is emphasized when compared with public agencies operating in the field of agriculture, incorporating well financed education and relief programs. The TVA Commerce Department stresses the need for expert assistance to business and industry and urges cooperation between business and agriculture. In the words of a TVA expert, "reworking the soil doesn't pave the way for new products--new markets may be needed first." This same expert pointed out that low cost transportation shapes an economy, and that Denver, Atlanta, and Indianapolis are the only large U. S. cities not located on low cost transportation routes. TVA's program has brought low-cost transportation to the Valley.

Site Planning and Architectural Services

With tracts of reservoir properties being licensed to individuals for commercial uses, TVA is concerned as to the types of development taking place on these lands. In addition to their responsibilities toward TVA's building program, the site planners and architects are given the job of passing on plans for such projects. Most of these projects are planned by the owner or contractor, without professional advice. TVA offers suggestions and tries, whenever
possible to give assistance before the project is planned. TVA architects and landscape architects, by means of advice, education and demonstration hope to improve the quality of the design of these developments.

Land Management

As one of the largest TVA Departments, the Reservoir Property Department, with 1200 employees, probably has more direct contact with the people of the Valley than any other program, with the possible exception of the Agricultural Relations Department. One of the most promising aspects of its work is its determination to establish TVA's relationships within the Valley in a manner which will develop and strengthen popular understanding of the purposes for which TVA reservoirs were created, and to encourage the people to participate in the management of these public properties. In this way the people themselves may obtain the dividends accruing from the additional uses which are compatible with the primary objectives for which the properties were acquired.

Topographic Mapping

General Purpose of Program

The purpose of this activity is to complete topographic maps of the Valley in conformity with standards established by the Geological Survey for the United States as a whole.
TVA Department Responsible for Program

Water Control Planning Department - Maps and Surveys Division.

Agencies Cooperating

The U. S. Geological Survey is responsible for nationwide topographic mapping, but has operated under a policy whereby it would only map the states where state funds could be matched with federal funds for the purpose. As a result very little mapping had been done in the southern states until TVA entered the picture with the necessary funds. Other agencies contributing to this cooperative mapping program are the state highway departments, the state geology departments, the U. S. Soil Survey, and the U. S. Forest Survey.

Annual Expenditures and Budget Allowances

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Accomplishments

The first job of this division was to cover the Valley with planometric maps, which, while they did not show topography, were far better than any existing maps. When this survey was completed, a system was adopted of securing
topography by means of aerial photography through the use of the multiplex machines.

When the war started, organization and facilities assembled for the Valley mapping project were made available to the army mapping service. Under assistance of the War Department maps were prepared, first of strategic areas in the Valley states and later of foreign lands. Mapping requirements in the Valley were stopped during the war.

Plans for the Future

Army assignments will be completed during 1946 and the competent wartime staff will be maintained to complete the Valley maps. It is proposed to complete the work with this expert staff in three years.

Cooperative Health Work and Public Health Studies

General Purpose of Program

The objectives of TVA's public health activities are three fold as follows:

(1) To concern itself with the public health effects of its work and the consequences of its activities as a builder and operator. The malaria control problem presents an example of this aspect of its work, as does the program of cooperation with health agencies near TVA construction projects. The purpose
of this program is to make possible an expansion of local health department staffs.

(2) As an employer, to be aware of and work for the improvement of the basic physical environmental and operational factors affecting the work of staff members and employees.

(3) To be responsible for encouraging measures and aiding and strengthening institutions which can add to and improve the welfare of the people. This is done by assistance on improved control services for tuberculosis; by studies and education in the field of human nutrition; by promotion of health programs among industrial groups in the area; and by cooperative work with local health officers.

TVA Department Responsible for Program
Health and Safety Department.

Agencies Cooperating

TVA has a cooperative arrangement with the University of Tennessee College of Medicine whereby the Authority contributes a small annual sum to stimulate malaria research. Other agencies supporting this project are the Office of Scientific Research and Development, the Mary Markle Foundation, and the United States Public Health Service.
TVA collaborates with state agricultural and health agencies in Virginia on a pilot study to determine the relation between soil improvement and human nutrition. Industrial hygiene services are carried on in consultation with the Division of Industrial Hygiene and the U. S. Public Health Service, and research in this field is conducted under a cooperative agreement with Vanderbilt University.

TVA participated in the development of a health education curriculum at the University of Tennessee, and in the planning of teacher training programs in health education at teacher training colleges.

Annual Expenditures and Budget Allowances

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<th>Year</th>
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Accomplishments

In the malaria infected areas 10% of the blood samples of those tested in 1939 showed evidences of infection. Similar tests in 1940 indicated a drop to 3%, followed by drops to 1% in 1942 and to a low fraction of 1% in 1943 and 1944. This achievement is even more remarkable when it is realized that conversion of the Tennessee River into a series of quiet pools would have resulted, without control, in a far worse situation than had existed prior to TVA changes in the area.
During the war emphasis was given to drug testing and was closely related to the national program of research for new anti-malarial drugs to replace the cut-off supply of quinine.

TVA collaborated with state and federal agencies in the collection of data relative to the unusually high prevalence of tuberculosis in certain sections of the south-east.

The agricultural and health project in the state of Virginia on which TVA is collaborating for the purpose of "studying the effect of sound agricultural practices in the soil-plant-animal-human relationship" is still in the process of development. In this connection the major achievement to date has been "the establishment of teamwork between health and agricultural interests in the exploration of a problem which has its origin in the soil and its most serious manifestations in the welfare of man." This experiment will not be completed until 1943.

In developing industrial hygiene, research studies have been made on the nature of phosphorus poisoning. TVA has collaborated extensively with health and educational agencies in the Valley in the development of educational programs for the purpose of raising the level of public information concerning personal and community health. In

6. Analysis of TVA resource development Programs - October 1945.
Tennessee this program included the organization of a health education curriculum at the University of Tennessee and the preparation of teaching kits on specific health studies to be used in the public schools of the state.

Plans for the Future

Just as other departments are turning their attention to the development of the Valley as a whole - the Health and Safety Department looks forward to the development of a Valleywide health program. Doctors to staff the four field offices maintained by the Department are selected on the basis of their concern for preventive medicine as opposed to treatment medicine. Safety features such as periodic examination of food handling establishments will be carried forward.

A psychiatrist has been recently added to the staff and will be responsible for the planning and progressive development of mental health services in relation to the general employee health and safety programs, for aligning this specialized service with those of other departments, particularly the personnel department, and for maintaining relationships with professional groups, organizations, and institutions for the purpose of assembling authoritative knowledge concerning mental hygiene practices and research developments.
Plans also include continued assistance to local health staffs in areas of TVA operation, and public health studies necessary in the conduct of the various TVA programs.

Development of Educational Relations

General Purpose of Program

TVA uses educational relationships for the following purposes:

1. To further the programs of the Authority, which depend for their effectiveness upon the understanding and voluntary action of the people of the Valley,
   (a) by cooperating with educational agencies and institutions in conducting research activities, studies and investigations.
   (b) by cooperating with educational agencies and institutions in training personnel to supply the skills needed for Valley development.
   (c) by arranging for educational agencies and institutions to provide technical instruction throughout the Valley in using methods and materials developed by TVA.
   (d) by cooperating in resource use education programs.

2. To secure provision of school facilities for children of TVA employee's in construction camps and operating
villages and library and recreation services for children and adults residing in those camps or villages.

3. For the readjustment of schools and libraries in locations to be flooded by TVA reservoirs.

4. For cooperating with local institutions and agencies in developing and using educational methods and materials for training TVA employees.

TVA Department Responsible for Program
Personnel Department - Training and Educational Relations Staff.

Cooperating Agencies
Regional channels have been established through the following agencies:

1. The Committee on Southern Regional Studies and Education which stimulates the development of instructional materials on southern resources.

2. The Tennessee Valley Librarians which is concerned with overall planning of library services in the Valley.

State channels are established as follows:

1. Staff assistance from TVA has been made available to western Tennessee and Kentucky communities on malaria control education.

2. Western Carolina State Teachers College with
the assistance of TVA has conducted a work-study conference on resource education.

3. Hiwassee College works with TVA on the development of a program for the improvement of rural life.

4. TVA has participated with the state of Georgia Department of Education in a workshop on community education.

5. TVA has assisted the Kentucky Program for Improvement of Living in education for resource use.

6. TVA is collaborating with Alabama Polytechnic Institute on the establishment of a research interpretation council.

Local channels

TVA works with the community of Talladega, Alabama on resource education.

Annual Expenditures

<table>
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<th>Year</th>
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</thead>
<tbody>
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<td>1944</td>
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Accomplishments

The work in Educational Relations does not constitute a program but is a facilitating service to the various program departments and is used to further the developmental aspects of their programs. This service has been made avail-
able for the following departments as follows:

1. Forestry Relations Department

A planned educational approach in forestry has been developed in elementary schools. It has been suggested that schools might have their own demonstration forestry areas. Periodic burning off of part of this area would show the effects of burning in contrast to the protected and well-managed portion of the area.

The TVA Forestry Department and educational institutions have collaborated as follows:

With the University of North Carolina on a survey of tannin sources to supplement the existing inadequate sources of supply.

With the Virginia Agricultural Experiment Station on pasture improvement tests in which honey locust trees are used to provide shade and forage.

With the University of Tennessee in the testing of black walnut trees.

With the Waynesboro High School, Wayne County, Tennessee, in developing a school forestry program.

2. Agricultural Relations Department

The memorandum of understanding signed by the Valley states land grant colleges, USDA and TVA defines understandings which result in the coordination of the various activities of these agencies related to a unified agricultural
program. TVA is now undertaking a detailed study of the relationships evolving from this basic memorandum of understanding in an effort to determine whether the same administrative pattern has potentialities in other fields.

The Department supplies funds to the colleges so that they may employ the personnel needed to carry on the agricultural program in the Valley.

The Department works with farmers' associations, which are the point of contact between TVA, the extension service and the farmer, and considers these associations the most critical educational group for the agricultural relations program.

3. Commerce Department

A cooperative arrangement exists between TVA and Alabama Polytechnic Institute whereby TVA gives financial aid to a program of education for farm people in the use of electrical farm equipment.

TVA and the University of Alabama are cooperating on a research project concerned with the future of iron and steel industries in Alabama.

Contracts on food processing have been organized with the Georgia Institute of Technology and the University of Tennessee School of Agriculture.

Mineral research will be carried on under TVA contract with the State of Georgia Department of Mines and
North Carolina State College.

TVA maintains a contract with the University of Tennessee in engineering research.

TVA and Virginia Polytechnic Institute are working together on a high school textbook on rural electrification.

4. Regional Studies Department

The Recreation Staff maintains relations with state departments of conservation pointing toward states taking the initiative in the development of recreational resources created by TVA lakes.

The Government Research Staff's educational activities are referred to above.

The Urban Community Relations Staff, in addition to programs encouraging citizen participation in planning, and collaborating with the University of North Carolina in developing its new graduate program in planning, collaborates with other institutions and agencies as follows:

With the University of Tennessee providing aid to the Jefferson City Planning Commission in developing a municipal code.

With the Maryville College (Tennessee) by aiding the local planning commission in developing a systematic property record system.

With the Virginia State Department of Education
by providing materials for resource use education.

5. Departments of Power

The Departments of Power cooperate with state universities in setting up plans for training home economists and agricultural engineers.

6. Health and Safety Departments

The Health and Safety Department cooperates with the University of Tennessee Medical College in Memphis in many studies including malaria control.

Vanderbilt University is conducting research in the use of phosphorus in relation to the industrial hygiene problem at Wilson Dam.

Virginia Polytechnic Institute and TVA have worked together on the pilot study on nutrition in southwest Virginia.

College students interested in malaria control work are employed by TVA during the summer. The department also trains U. S. Army sanitation men at Wilson Dam, and industrial health nurses.

Plans for the Future

The Staff plans continued cooperation with the Committee on Southern Regional Studies and Education on the preparation of materials. Plans also include the extension of library services to all parts of the Valley, the encouragement of collaboration between educational agencies and action agencies, provision of architectural advice to state depart-
ments of education, and studies of occupational needs of
the region and regional consideration of educational pro-
grams.

Transportation and Industrial Economic Studies

General Purpose of Program

The purposes of this program are as follows:

a) To assemble factual information about the kind,
    quality, quantity, and location of resources that are a-
    vailable for use by businessmen.

b) To conduct technical and industrial economic re-
    search necessary to determine the best alternative ways in
    which these resources can most effectively be utilized.

c) To identify individuals or groups who have the
    initiative and capacity to apply modern technology in particu-
    lar businesses related to opportunities revealed by research.

d) To work with those individuals or groups and to
    assist them in applying modern technology to the utilization
    of resources with profit, and at the same time to produce
    goods and services that can be of maximum benefit to the
    people as a whole.

e) To make recommendations for administrative action
    and for the enactment of legislation designed to bring about
    a fuller utilization of the basic resources of the Valley.
TVA Department Responsible for Program

Commerce Department - Industrial Economics Division.

Cooperating Agencies

Studies are based upon standard sources of technical and economic information. Data compiled by all government agencies, including the Department of Commerce, the Bureau of the Census, the U. S. Department of Agriculture, and the Bureau of Mines are used when appropriate. Information is also obtained from state colleges and universities and state and local planning commissions. Findings that are forthcoming from these studies are made available to the public through these same state and local agencies.

Annual Expenditures and Budget Allowances

1945  Actual  $58,247
1946  Estimated  $100,000
1947  Estimated  $100,000

Accomplishments

Comprehensive studies and reports have been prepared dealing with potential plant sites and the location of raw materials for industrial use, including the evaluation of alternative locations for manufacturing semi-porcelain dinnerware, elemental phosphorus, and opportunities for commercial
cold storage facilities.

Three important studies of the interterritorial freight rate problem were made by the staff of the Industrial Economics Division who also gave expert testimony at public hearings which served to support efforts for parity. As a result of these studies the Interstate Commerce Commission, in May 1945, decided in favor of the south and west in their fight for parity with the north and east in railroad freight rates on high-grade manufacturers. This decision will ultimately mean better conditions for the birth and growth of industry in the south and west. New industries, or prospective new industries in the Valley are increasingly seeking advice from TVA on industrial location. TVA analyzes each problem and points out possibilities but refrains from making definite recommendations.

Plans for the Future

Studies will be made to determine the economic feasibility of specific industrial enterprises which have apparent prospects in the region. Market studies will be made to develop outlets for various commodities produced in the region, and for studies of economic conditions in the Valley involving long-term analyses of economic factors related to industrial development.

TVA-State Relationships

The TVA Commerce Department and particularly the
Division of Industrial Economics works closely with state planning agencies. As mentioned earlier in the report all the Valley state planning agencies were invited to attend a meeting at Knoxville in 1945 for a discussion of common problems in resource development and to become more fully acquainted with the work of this Division.

Site Planning and Architectural Services

General Purpose of Program

The work of the Site Planning and Architectural staffs consists of planning for the preparation of sites and location and design of buildings both for TVA, on land owned by the Authority, and as a service to states and local communities. Projects outside of TVA are channeled through the Recreational Relations and the Urban Community Relations staffs and are undertaken as demonstrations.

TVA Department Responsible for Program

Regional Studies Department - Site Planning Section and the Office of the Staff Architect.

Cooperating Agencies

These services cooperate with all TVA departments. Outside contacts are channeled through Recreational Relations and Urban Community Relations to state and local planning agencies.
Accomplishments

The two staffs have been responsible for the site planning and architectural work on TVA's 25 dam reservations, electric power substations, power department warehouses, reservoir property maintenance buildings, demonstrations and examples of boat landings and visitor's facilities, service points along the lakes for privately owned boats, basic underwater improvement of harbors, shelter locations for boats, and for various facilities at Muscle Shoals including an office building, power service building, chief engineer's building, and a reception center for visitors to the chemical plant.

Major demonstration projects, such as whole communities, parts of communities, and parks and recreational areas, have been developed by these services in collaboration with the Regional Studies and other departments.

Both services are charged with the responsibility of reviewing plans for privately financed developments to be built upon land leased from TVA.

Plans for the Future

This program will continue with present responsibilities, and will encourage, stimulate, and strengthen education and research in physical planning.
Land Management

General Purpose of Program

The purposes of this program are to supervise the use of TVA's reservoir properties and, in view of the many contacts of those responsible for this program with the people of the Valley, to develop a popular understanding of TVA policy. Responsibilities also include law-enforcement on TVA properties, population readjustment, representation of the Authority in the use of its resources in the event of disaster, operation of the villages in construction camps, operation of all commercial activities (restaurants, sewage and water services, etc.), physical application of malarial control measures, and the use of all TVA lands.

TVA Department Responsible for Program

Reservoir Properties Department

Cooperating Agencies

The Reservoir Property Department cooperates with the state departments of conservation on matters of recreational land use, with the U. S. Public Health Service who supply DDT for malaria control work on an experimental basis, with the U. S. Public Safety Service on wartime protection, and with numerous other state, federal, and local public and quasi-public agencies.
Annual Expenditures and Budget Allowances

1945 Actual (net) $2,857,629
1946 Estimated (net) $3,038,000

Accomplishments

By 1945 the Reservoir Property Department had under its control about 512,000 acres along the banks of its reservoirs. This land is used for productive purposes, such as agriculture or forestry; for commercial projects, such as war plants or navigation terminals; or is under consideration for recreational development by states or other agencies or individuals.

More than 94,000 acres are licensed to farmers for agricultural uses.

For purposes of general supervision of the TVA lands, the Valley is divided into six management areas. Each area manager is responsible for all operations in that locality. These managers work with Land Use Associations or Land Conservation Associations in each county. These Associations publicize to the farmers the availability for use, of TVA lands, with information on conditions of its use.

Part of the responsibility of these citizen groups is to develop farm plans with tenants and to police the use of land. Before long TVA hopes to go one step further and permit these Associations to do the actual licensing of the
land. In this way the disposition and use of TVA lands would become the responsibility of local and county groups of citizens.

The Department receives and acts upon applications from individuals for TVA lands. Counties have requested TVA to buy up small groups of houses isolated by TVA development so that such groups will not have to be served by the community.

TVA's land purchase policy is changing. Originally the Authority took the point of view that it should own all the lands with which it was concerned as to use. Today TVA buys less land and relies on the process of education rather than ownership.

Not the least important of TVA's land management activities has been its program of population readjustment. Since the founding of TVA, the Department has supervised (along with cooperating agencies) the removal of 13,638 families from 17 reservoir areas.

Plans for the Future

Within the next 10 or 20 years the Department expects that the major part of TVA's recreational lands will be turned over to the states. Meanwhile there will be a constantly increasing use of education to facilitate TVA's land use program.
NOTES ON PLANNING PROCEDURES IN THE TENNESSEE VALLEY

Having been away from TVA for several months and looking back on impressions gained while there and on conversation with TVA officials since then the writer feels that this report would not be complete without special reference to some of the planning procedures now operating in the Tennessee Valley.

Rather than setting up a planning department within the Authority, TVA requires each department to undertake its own research and planning, and insists that the work of each department be integrated with all other departments concerned in the development of all of its programs. The department primarily responsible for a program normally acts as the coordinator for that particular program. In this way the planning process is not set aside in the hands of a few trained experts in the field of planning, but goes hand in hand with action and permeates the entire organization.

Each department has its own program and objectives which are coordinated with those of other departments. Attempts have been made to combine these integrated programs into a single report, charting a course of action over a period of years. In the opinion of TVA leaders,
the value of these reports, which come nearest to what planners would call a "plan", is principally their educational value to those who participate in their preparation. TVA points out that constantly changing conditions call for a greater flexibility of approach than would be possible if such a "plan" were adopted and followed, and that the adoption of any sort of master plan would tend to stifle the continuous study of problems.

The success of TVA in carrying out its program suggests that a separate planning body is most needed where long-range planning is not accepted as a normal function of departmental units, where personnel competent to perform the planning function is lacking, and where effective coordination and integration of departmental programs is difficult to achieve. TVA's decision as to the place of the planning function in its own organization offers no direct answer to the much debated problem of where this function can best be placed in state and local government. Lines of authority are diffused in state and local governments and cooperative effort is difficult to bring about. Unlike state and local administration where key positions are frequently changing hands, TVA executive personnel and department heads enjoy a degree of permanence which gives them an opportunity to build up their admittedly ideal administrative teamwork over a period of years.
So much for planning within the Authority. Of greater interest to the city planning profession are the programs of the Valley state planning agencies in the field of local planning assistance. This work began when TVA contributed funds to these agencies to enable them to secure the technical help needed to assist communities affected by TVA projects. Today the state planning agencies in Alabama and Tennessee have taken over this responsibility and have extended this service throughout their states. As a result of this program the provision of technical planning assistance to municipal and county planning organizations has become an established function of state government in Alabama, Tennessee, and to a more limited extent in Virginia and North Carolina.

TVA believes that makers of plans should have much to do with their execution, and that successful results can best be achieved when technicians recognize the inseparability of planning and responsibility for action. This philosophy has been adopted by the state planning agencies in Alabama and Tennessee. The planning assistance program in these states is conducted through district offices distributed throughout these states. Each office is responsible for planning assistance to communities in its area. The work of these branch offices is supervised and coordinated by the administrative staffs of these agencies located in
Montgomery and Nashville.

The local technician may be responsible for five or ten communities in his immediate area. He lives in his district and pays frequent visits to the communities who have applied to the state for planning assistance. In many cases the communities pay part of the cost of such services, but in no case would this fee compare with the charges of a private planning consultant.

In this way over fifty municipalities with populations ranging from one thousand to twenty five thousand persons and several counties are securing technical planning assistance they might not otherwise be able to afford. As stated above this service is given by a resident planner. In contrast to a private consultant who makes a few visits and prepares a plan, these resident planners become intimately acquainted with the problems of the region for which they are responsible. Rather than doing the planning themselves, these technicians show the people how to do their own planning.

This approach to planning which TVA developed and which has now been adopted by states in the Tennessee Valley is having its effect on other parts of the country. Wisconsin and Michigan have similar programs and other states are considering the possibility of developing such a service.
State organized and financed local planning assistance is obviously the best means of bringing technical help to the towns and counties of the southeast. These communities, with a few exceptions, are unable financially to pay for the services of a planning consultant. In other parts of the country, especially in the states where municipal corporations are in better financial conditions and where planning consultants are more plentiful, there is less need for the state to perform these services. But the Tennessee Valley solution has one distinct advantage. Technical assistance is made available in such a way that the people look upon planning as a continuous process. These communities, most of which are unable to support a staff of trained technicians, take it for granted that advice is needed over a period of years. There is no temptation to prepare comprehensive plans and let the planning stop there.

State and federal agencies are looking more and more to state planning agencies as channels for their programs. The close relationship existing between the state planning agencies and local planning commissions in Alabama and Tennessee presents an effective set up for the channeling of such programs to individual communities.

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