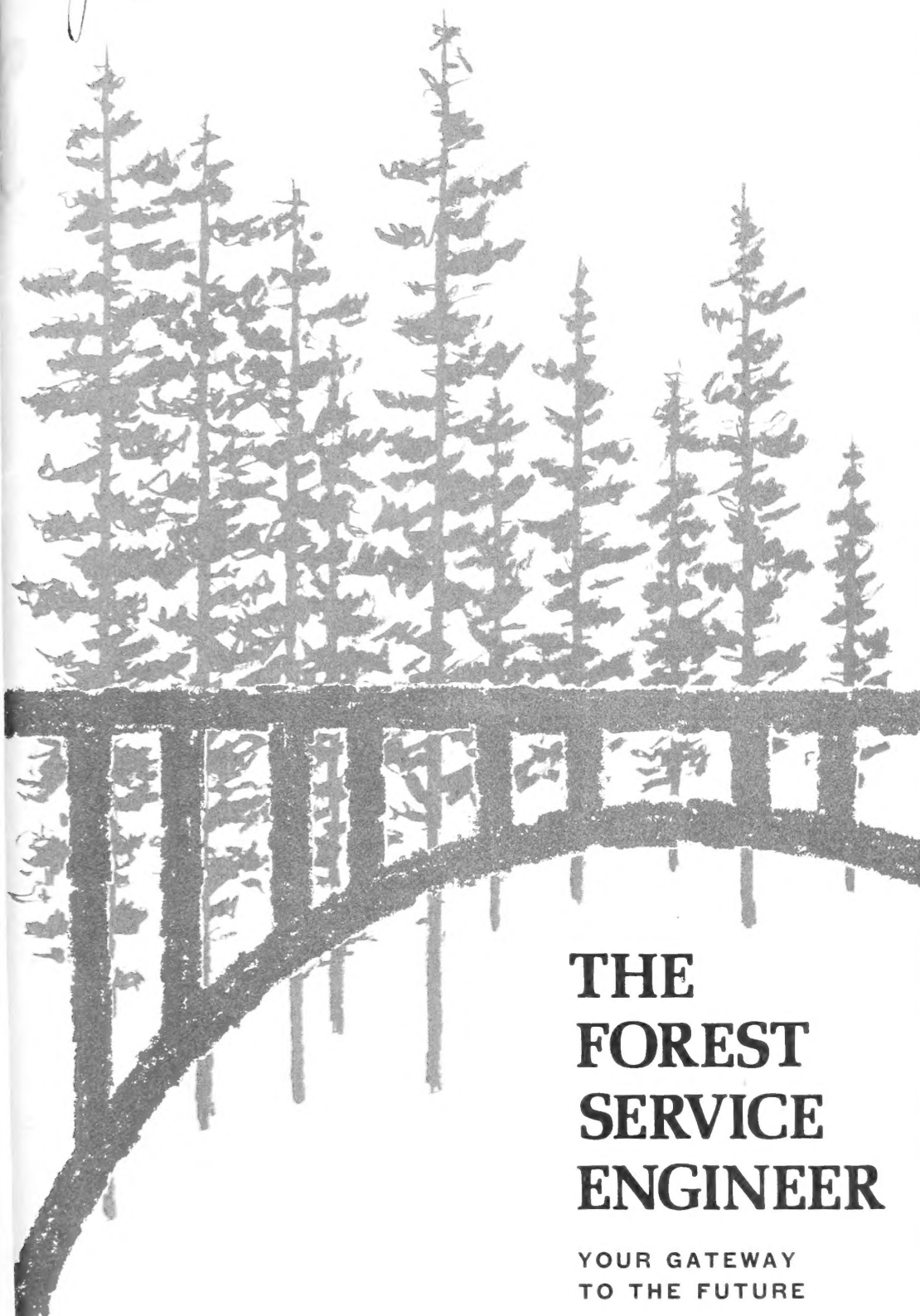


## Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.



Ag 9847m  
Cap. 3



# THE FOREST SERVICE ENGINEER

YOUR GATEWAY  
TO THE FUTURE





UNITED STATES DEPARTMENT OF AGRICULTURE  
FOREST SERVICE  
WASHINGTON 25, D.C.

IN REPLY REFER TO

To a Prospective Forest Service Engineer:

Challenging opportunities await you as a Forest Service engineer. Just as you may be looking for us, we are looking for you. Especially if you are the kind that will be satisfied only with the best in a career position.

To try to reach you we have written this booklet. It tells about the U. S. Forest Service--what it is, what it does, how it operates, and what it offers the graduate engineer. But of course a mere booklet cannot tell the whole story of our varied and interesting engineering activities. We hope it will kindle a spark that will lead you on to find out more. Our engineers and personnel people will gladly fill in details, answer any questions you may have.

Much of our work is done on the National Forests in some of the most spectacular country in the world. Many intangible rewards are yours in helping to protect, manage, and use the great forest resources of the Nation--the water, wood, forage, wildlife, and outdoor recreation. Since variety is a keynote in Forest Service engineering, you quickly gain a well-rounded experience.

If these obvious career advantages appeal to you, I invite you to read the booklet. If you like what you find here--and frankly I think you will--I invite you to become a FOREST SERVICE ENGINEER.



A. P. DEAN  
Director of Engineering





478000



478001

**THE  
FOREST  
SERVICE  
TODAY  
AND  
YESTERDAY**

485546



468799



**forest service people and practices  
keep pace with current needs**

*The Forest Service—  
from the seedling to the tree . . .*

The Forest Service was established in 1905 as an agency of the Department of Agriculture. It was assigned responsibility for a number of programs which until then had been directed by various offices of the Federal Government. At that time the organization numbered 734 employees. Its biggest job was the administration of 60 federally owned forest reserves located west of the Great Plains and aggregating 56 million acres.

Today the Forest Service employs 19,000 people in permanent full-time positions and 20,000 more in seasonal work. Major responsibilities now include administration of 154 National Forests and 19 National Grasslands totaling 186 million acres in area; direction of cooperative forestry programs in 50 States, Puerto Rico, and the Virgin Islands; operation of 12 regional experiment stations and about 100 research project offices, laboratories, and smaller installations.

Even more significant than this expansion and growth is the way Forest Service techniques, practices, and standards have kept up to date. The present-day counterpart of the picturesque oldtime forest protector with his horse and buggy frequently travels by airplane and helicopter. Single-lane bridges on National Forest roads have given way to modern structures of steel and concrete. Forest fires which once occasioned hours of travel and days of manual labor are now controlled by up-to-the-minute techniques and mechanical equipment. Other examples can be cited. Application of engineering skills and procedures has had much to do with these developments.



49352



in the field and in the laboratory the search for better methods and better use of resources is constantly in progress



464865

engineering activities are chiefly associated with national-forest programs designed to protect, manage, and develop forest resources including timber, recreation, water, wildlife, and forage



491580



483

cooperation with other public agencies and timberland owners in forest management and protection is the major work of the state and private forestry divisions



484411



*Forest Service activities are mostly in three fields...*

**NATIONAL FOREST ADMINISTRATION** is the largest of the three major fields and it employs the most people, including a large number of engineers. The National Forests contain many resources of great value—timber, water, forage, recreation, fish and game—and subsurface values like coal and other minerals. All of these are available for appropriate use by people. Forest Service Engineers contribute importantly in the planning and development of physical improvements and facilitating services needed in the conservation and proper use of these resources and values. General administration of all Forest Service activities in all branches is exercised by the Chief and his staff headquartered in Washington, D.C. This central office is made up of a number of functional and operating divisions. One, headed by the Director of the Division of Engineering or Chief Engineer, is responsible for standards, policies, and practices in engineering activities. The division functions through similarly constituted branches in 10 regional offices which, in turn, exercise their responsibilities through engineers on the various National Forest units, usually directed by a Forest Engineer.



483530



478281



486607

**RESEARCH** is another field. Large numbers of people representing many sciences and skills are employed in it. Research activities in which engineers are employed include the hydrologic features of watershed management, equipment development and modification, wood technology, materials of construction, soil stabilization, cartographic procedures, forest fire behavior.

**COOPERATION** with other agencies concerned with land use and with the owners of timberlands is the third. This cooperation is mostly related to forest management and protection. Engineering services are required in connection with equipment use and the development or maintenance of logging roads.



## *Forest Service engineers work in a broad field with many variations*

In its broad mission of protection, development, and utilization of the 186 million acres of National Forests and Grasslands, which lie in 41 of the 50 States, the Forest Service has numerous requirements for the services of professional engineers. While in many instances these needs for engineering talent are similar to those of counties, cities, States, or other organizations having management responsibilities over large land areas, Forest Service engineers have unusual and interesting assignments which are not found elsewhere.

Large areas of these National Forest lands are as yet undeveloped and still lie in their natural state. Although some tracts are to remain permanently in this status and have been designated as Wilderness Areas, the remainder will be made accessible and developed for various uses. For example, an access road system of 550,000 miles will be needed before full utilization is possible. At present only 180,000 miles are in existence. Development of the access road systems is followed by the construction of other improvements such as administrative headquarters, campgrounds, airfields, dwellings, dams, water supply and sewage disposal systems, and many others. But construction is not the only work of Forest Service engineers. Their other responsibilities include topographic and cadastral surveys, equipment management and development, installation and maintenance of communication systems, and several types of research.

## *Most Forest Service engineers work on the national forests*

Each of the 154 National Forests is identified by name. In most cases each forest has its own Forest Supervisor headquarters and administrative staff. This usually includes a Forest Engineer and his assistants, who are responsible for all engineering jobs on the forest insofar as responsibility can be delegated to them. While these people are primarily concerned with the construction of improvements, they also have many other responsibilities such as facility and equipment maintenance, watershed protection, and the other types of work normally done by engineers.

Most newly employed Forest Service engineers begin their career on a National Forest staff. Those who choose to continue in staff work become progressively eligible for promotions to more responsible positions and eventually may become Forest Engineers. Beyond this, many former Forest Engineers have been promoted to positions in the Regional and Washington, D.C., offices. Initial experience on a forest staff is also helpful to those interested in the more technical aspects of engineering. Those so inclined may choose to transfer from a forest staff to one of the available specialized careers, which are equally important.

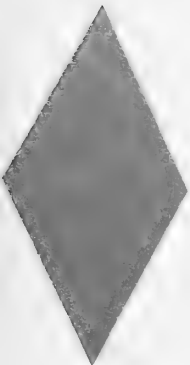
550,000

<b>ROADS</b>		
Existing	—	180,000 miles
Needed	—	<u>370,000 miles</u>
Total	—	550,000 miles

180,000



## *Civil engineering—general . . .*



The largest group of Forest Service engineers hold degrees in civil engineering, and most new appointments are made from those qualified either under this classification or as highway engineers. Civil engineers occupy most of the permanent positions on National Forest engineering staffs. Those who begin their career in one of these assignments become eligible for progressive promotions as they qualify by ability, training, and experience. For those who wish to continue in staff assignments, higher grade positions are available in the Regional Offices as well as on the staff of the Director, Division of Engineering, Washington, D.C., where national programs are planned and coordinated. Other Regional and Washington Office positions in similar grades are open to civil engineers who choose to qualify for the more highly technical engineering assignments by special training and experience.

The civil engineers on a National Forest staff have an interesting variety of work assignments. For most improvement projects, their responsibility begins at the survey and planning stage and continues to completion with full responsibility for all phases. Thus the engineer is able to see his own work develop into a completed and usable facility. He may also have maintenance responsibility after construction is completed. Exceptions to this practice are made only when more specialized assistance is necessary. For example, a bridge or large building may be designed by engineers in a Regional Office. But even in these instances the Forest staff usually will make the site surveys, provide the basic design criteria, and supervise construction.

In many areas road construction is the major activity. Other duties of civil and highway engineers employed by the Forest Service vary widely with the many diverse and challenging requirements. They may on occasion be assigned responsibilities in transportation system planning, cadastral (land line) surveys, topographic surveys and mapping, streambank stabilization, watershed protection, erosion control, or the design and construction of remote airfields or mountain ridgetop heliports. On occasion, they may have rugged fire control missions. These present many opportunities for the exercise of professional ingenuity and resourcefulness.

Other beginning positions are available to recent civil engineering graduates. Among these are training assignments at regional headquarters and the Forest Service Photogrammetric Service Center in Alexandria, Va. The Alexandria office supports the work of all regions in topographic surveys and mapmaking. Photogrammetry and electronic measuring devices are used extensively in this work as well as in road surveys and design. Still other starting positions are in research. In all assignments maximum opportunity is provided for the beginner to obtain the experience needed to qualify for the professional license.



468823

## *Civil engineering—specialized*

**HIGHWAYS.** While much highway engineering work is done by the engineering staffs on the National Forests, there is more advanced work in this field for which special training is required. This includes road design using digital computers, the establishment of design standards, preparation of general construction specifications, economic analyses of proposed programs, and other related responsibilities that are not normally delegated to a forest staff. This type of work is accomplished by civil engineers who are specialists in highway engineering.

**BRIDGES.** Specialists in this branch of civil engineering are employed for the design of the many bridges needed in the forest road system. In contrast to the work of State Highway Departments, Forest Service requirements for bridges permit little use of so-called standard designs which can be adapted for use in various locations. Usually each bridge site presents a special problem that requires a high degree of professional competence. The type of foundation must be considered in each instance. For the bridge design, sometimes it is found that a concrete arch is most suitable. At other sites rigid frames, trusses, concrete or steel beams, or suspended spans may be used. The bridge engineer must be qualified to give each of these options careful consideration. In reaching the best solution he must rely on his training and experience plus a maximum use of his own initiative and ingenuity.

**STRUCTURES.** Civil engineers who specialize in structures are engaged in the planning, design, and construction of a wide range of facilities as well as their reconstruction, repair, and maintenance. Structures required by the Forest Service include the conventional items such as offices, warehouses, and residences needed by any large organization plus many others peculiar to Forest Service use. Large and small dams, retaining walls, fire control installations, and research laboratories are examples. In addition to design work at the drawing board, the structural engineer may be assigned as construction inspector or as resident or project engineer. He may do other types of fieldwork. As a forest land management agency, the Forest Service encourages the use of timber engineered designs, but it provides ample opportunities for experience in designs using masonry, reinforced concrete, and steel.



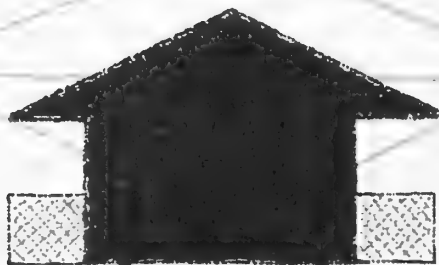
25,000



**BUILDINGS**

Existing	—	15,000 structures
Needed	—	10,000 structures
Total	—	<u>25,000 structures</u>

15,000





## *Civil engineering—specialized*

**HYDROLOGY AND WATERSHED PROTECTION.** In many mountainous areas on National Forest lands, erosion is a most serious problem. This is especially true in the Western States. Such situations quickly become critical after the area has been burned over by a forest fire. Forest Service civil engineers are interested in controlling this erosion, not only to minimize the loss of surface material and the downstream damage it causes, but also to protect the watershed and the water it provides for more beneficial use. Frequently debris dams are constructed as the most suitable method of control.

**WATER SUPPLY AND SANITATION.** About 110 million visits are made annually to the National Forests for recreation including hunting, fishing, camping, or just plain sightseeing. The number of these visits increases each year. Thus, the Forest Service has inescapable responsibilities with regard to public health. These include adequate supplies of safe drinking water and suitable sanitary facilities. In large campground areas such requirements become quite extensive. The same services must be provided also for many ranger stations and other Forest Service field headquarters located at remote points not served by municipal installations. In these instances full responsibility for design, construction, and maintenance supervision falls on Forest Service engineers, who must be trained and have experience in this type of work.

**TOPOGRAPHIC SURVEYS.** Topographic surveys and the related map-making (cartography) are important Forest Service activities for civil engineers who by interest and qualifications choose to specialize in this type of work. The most modern methods, including photogrammetry, are used in mapping the remote, mountainous Forest Service lands. The Division of Engineering in each of the 10 Regional offices has a separate Survey and Maps Branch made up of civil engineers and cartographers, assisted by trained technicians. In this activity Forest Service engineers coordinate fully with those employed by the U.S. Coast and Geodetic Survey, the Army Map Service, and the U.S. Geological Survey. In the Washington, D.C., office, Division of Engineering, a Photogrammetric Service Center, located in Alexandria, Va., is directed by the Chief of the Surveys and Maps Branch. This organization also is supervised and staffed by civil engineers who specialize in this field.



489690

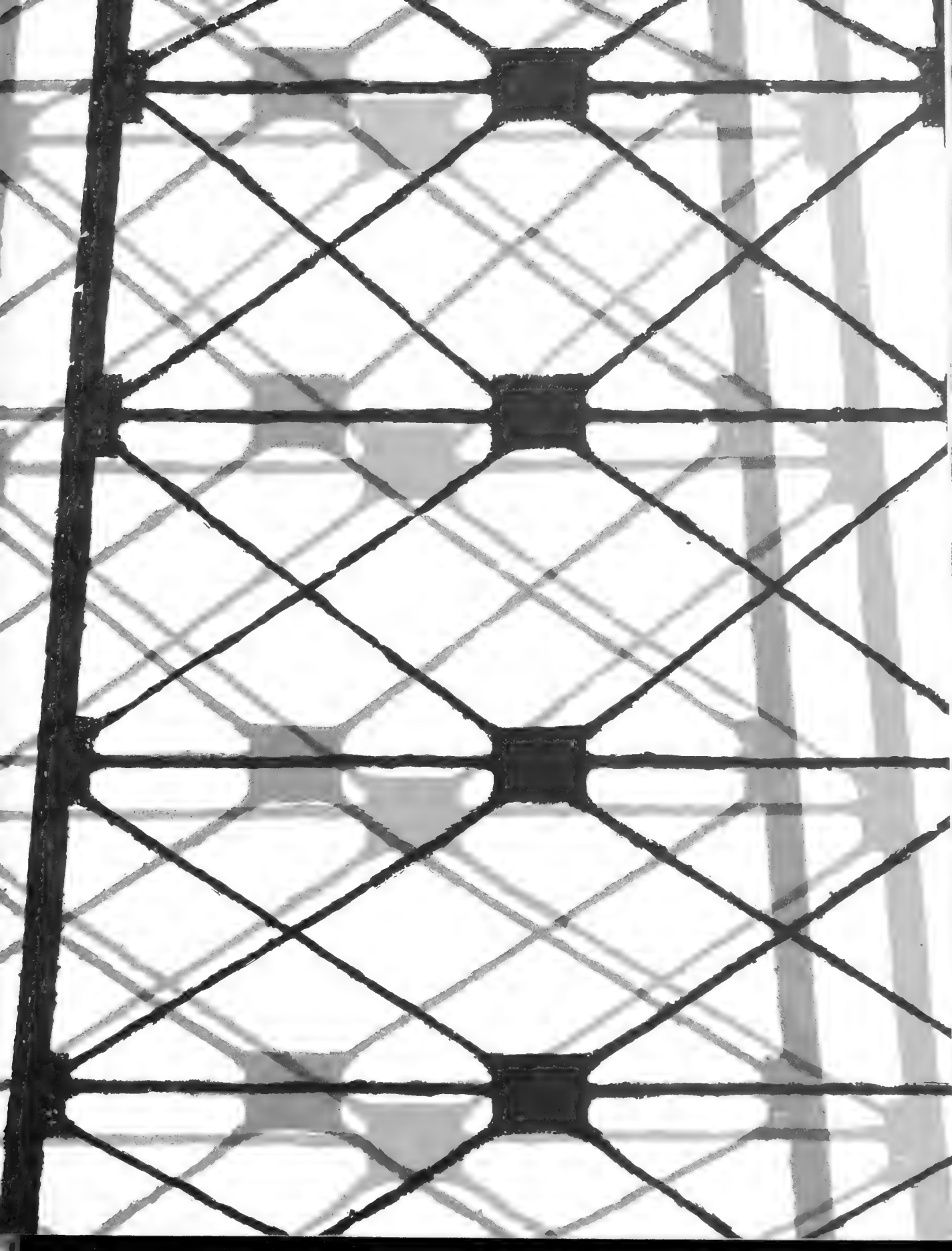


476550

## *Civil engineering—continued*

**CADASTRAL SURVEYS.** Monumenting property corners and locating, marking, and posting the property lines of the lands under the administration of the Forest Service is an enormous job for the civil engineers assigned to cadastral engineering positions. Besides surveying for corner monumentation and property line location, there is a continuous need of new surveys for land acquisition, administrative sites, recreation areas, and other purposes. An engineer employed in cadastral engineering is usually licensed or registered in at least one of the States within the Region to which he is assigned. The cadastral engineer maintains close relationship with the Bureau of Land Management, Department of the Interior, in searching for and monumenting public land corners in the National Forests.

**WATER AND POWER DEVELOPMENTS.** One of the most important products of the National Forests is WATER. Consequently, Forest Service engineers are called upon to work with engineers of the power and water developing companies, the Federal Power Commission, the Corps of Engineers, the Bureau of Reclamation, and the Soil Conservation Service. As the choicer damsites (readily accessible and offering easy construction) are developed and as demand increases, water and power developers are going to the headwaters of our great rivers and onto National Forest lands. The Forest Service engineer works with engineers of the developer from the time a project is conceived until it is put in operation after construction. Even during operation he will consult with the developers on matters of flood routing, reservoir levels, minimum water releases for downstream water needs, and other matters of operation as they affect National Forest interests. The engineer is a vital member of the Forest Service team which analyzes, in advance, the long-range impacts and benefits of a major dam upon the watershed and its broad area of influence in all respects.





## *Mechanical engineering . . .*

Forest Service mechanical engineers are assigned either as members of the general staff or to specialized work. On the staff they have significant areas of responsibility for the design, construction, and maintenance of National Forest improvements. These include heating, ventilation, air conditioning, and the other features which mechanical engineers normally handle. Engineers assigned to one of the two specialized fields, equipment management and equipment development, have unusually interesting career opportunities.

Plans call for beginning mechanical engineer positions to be filled each year in both staff and specialized work. To provide broader training for recently employed mechanical engineers and enable them to develop a full professional career, they may be offered opportunities for transfer from one type of assignment to another.

**EQUIPMENT MANAGEMENT.** The Forest Service uses an equipment fleet consisting of motor vehicles, firefighting equipment, and road construction and maintenance items, besides special automotive and mechanical equipment for other uses. Included in this fleet are over 600 passenger cars, 8,000 light trucks, 1,000 medium and heavy trucks, 200 pieces of firefighting equipment, 700 tractors, 50 power shovels and loader units, 300 road maintainers, and 700 miscellaneous items including fixed wing and rotor aircraft. The purchase, maintenance, repair, replacement, and general management of this fleet are planned and directed by Forest Service mechanical and automotive engineers. Each of the 10 regional headquarters offices has an equipment manager, normally classified as a mechanical engineer. He and his assistants are assigned general management responsibilities for the regional fleet, including the units assigned to forests, ranger districts, and other parts of the organization for field use. Equipment management engineers prepare purchase specifications, establish use rates, inspect newly acquired units, and prepare and publish servicing, lubrication, and other standards related to the use of equipment in the field.

The equipment management engineers also have general supervision over equipment maintenance facilities and shopwork. In some instances they directly supervise centrally located depots and shops which are under the equipment manager's control. In others they have technical responsibility for maintenance work done in other Forest Service or privately owned shops.



496216



481684



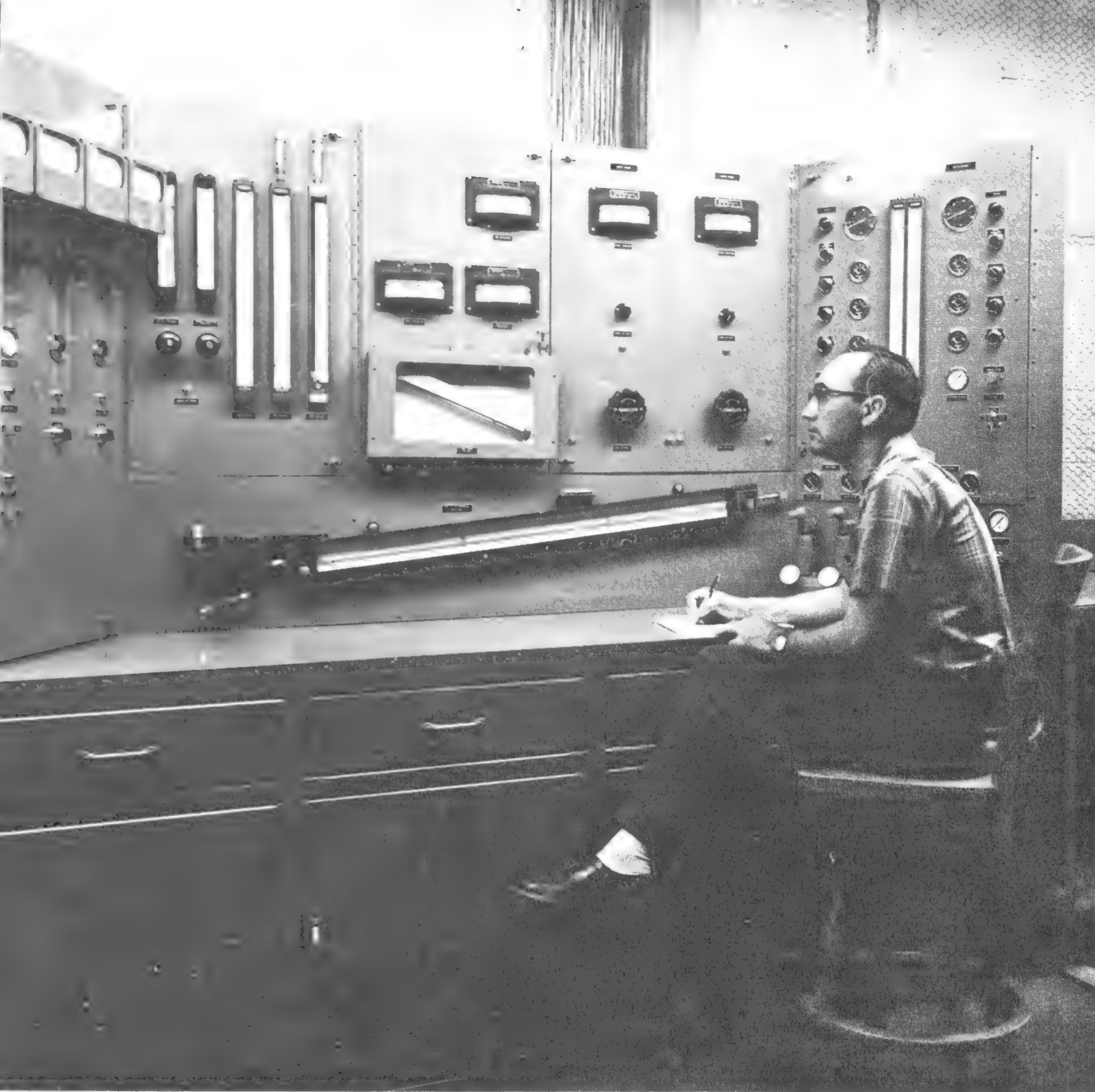


## *Mechanical engineering . . .*

**EQUIPMENT DEVELOPMENT.** In its day-to-day field activities the Forest Service uses many types of automotive and mechanical equipment. Most of this consists of conventional types and models, available in the commercial market. However, the Forest Service has many requirements for which no suitable equipment has yet been developed. Responsibility for meeting the special needs falls on the mechanical engineers who are assigned to equipment development work. These men are normally stationed at the Forest Service Equipment Development and Testing Centers in Arcadia, Calif., and Missoula, Mont.

When the need for a special type of equipment is discovered, and it appears likely that a suitable unit can be provided, an equipment development project is initiated, approved, and assigned to one of the development and testing centers. There the engineers first study the problem in relation to all the apparent practical solutions. Usually they first consider the modification of, or the design of special attachments for, standard commercial units. When modifications or attachments are found impractical, completely new devices are designed, built, and tested.

Many of the efforts of these engineers have been most useful. For example, devices for the release of fire-retardant chemicals, insecticides, and herbicides from aircraft have been developed and put into use. Much of the fire control equipment now used by the Forest Service was built in accordance with design features originated by the equipment development engineers. Many other interesting projects such as "brush busters," contour plows, and various types of helicopter hardware have been developed successfully.



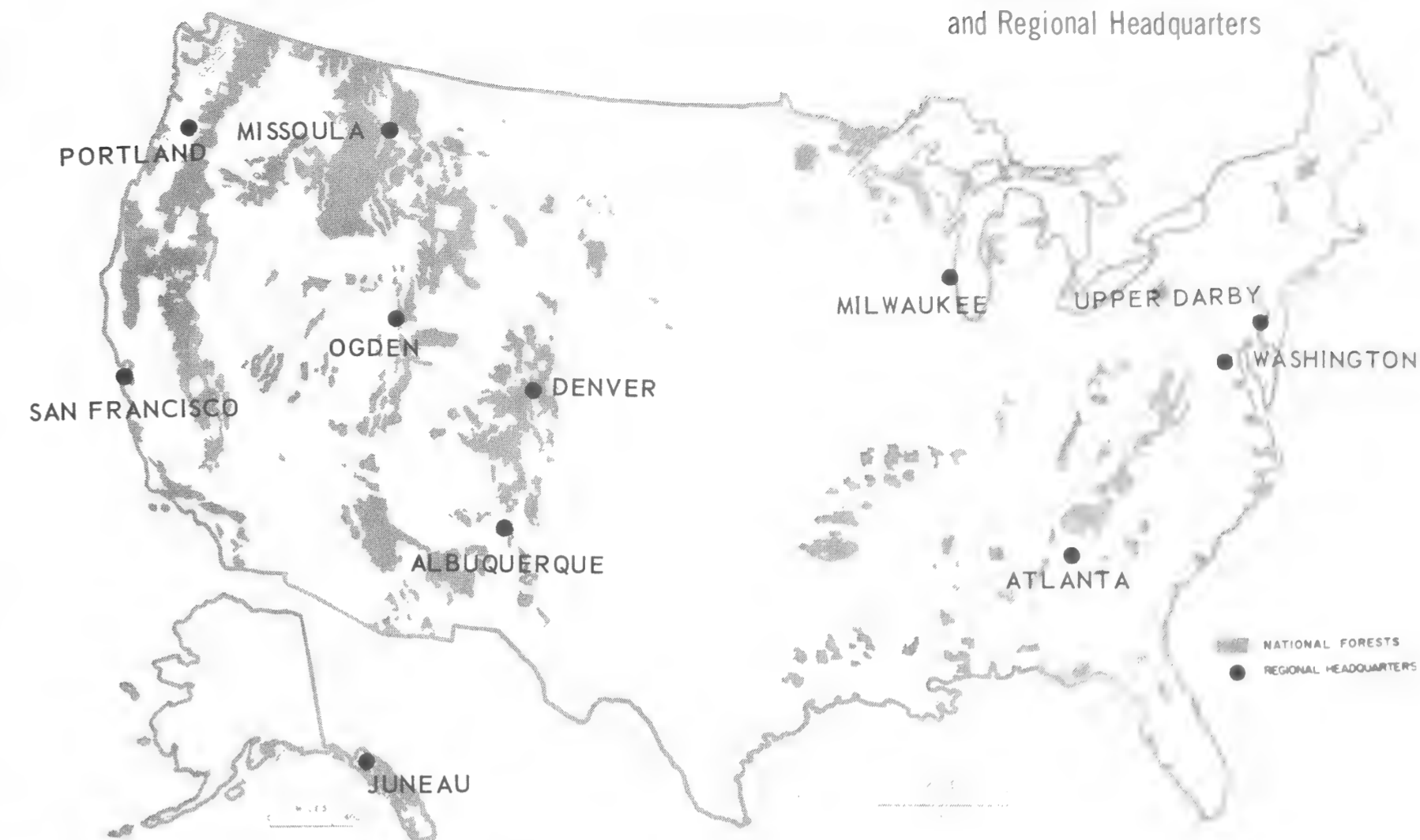
496216



481654



NATIONAL FORESTS  
and Regional Headquarters



### *Mechanical engineering*

**EQUIPMENT DEVELOPMENT.** In its day-to-day field activities the Forest Service uses many types of automotive and mechanical equipment. Most of this consists of conventional types and models, available in the commercial market. However, the Forest Service has many requirements for which no suitable equipment has yet been developed. Responsibility for meeting the special needs falls on the mechanical engineers who are assigned to equipment development work. These men are normally stationed at the Forest Service Equipment Development and Testing Centers in Arcadia, Calif., and Missoula, Mont.

When the need for a special type of equipment is discovered, and it appears likely that a suitable unit can be provided, an equipment development project is initiated, approved, and assigned to one of the development and testing centers. There the engineers first study the problem in relation to all the apparent practical solutions. Usually they first consider the modification of, or the design of special attachments for, standard commercial units. When modifications or attachments are found impractical, completely new devices are designed, built, and tested.

Many of the efforts of these engineers have been most useful. For example, devices for the release of fire-retardant chemicals, insecticides, and herbicides from aircraft have been developed and put into use. Much of the fire control equipment now used by the Forest Service was built in accordance with design features originated by the equipment development engineers. Many other interesting projects such as "brush busters," contour plows, and various types of helicopter hardware have been developed successfully.





## *Electrical engineering . . .*

The broad field of electronics provides most of the opportunities for an electrical engineer in the Forest Service. Two-way land mobile radio systems are employed extensively in Forest Service work. There is also a considerable mileage of Service-owned telephone lines. Responsibility for design of these systems, as well as direction of their procurement, installation, and maintenance, falls to the electrical or electronic engineer. Development of the facilities necessary for interconnection with commercial telephone exchanges, design of special electronic aids for the aerial firefighting program and for improving fire detection, telemetering devices and systems for recording weather data, and similar items for the general use of the research worker are examples of the numerous opportunities for interesting individual work.

The Forest Service electrical engineer also serves as technical advisor to engineers and administrators of other disciplines in preparing and in reviewing plans and specifications for Forest Service construction projects. He has the same responsibilities in reviewing plans for the numerous authorized projects of private users of National Forest land, such as the transmission lines of power companies, private power plants, ski lifts, and other large recreation developments. Recent graduates are assigned to training positions in preparation for assuming these responsibilities as they become qualified by experience.

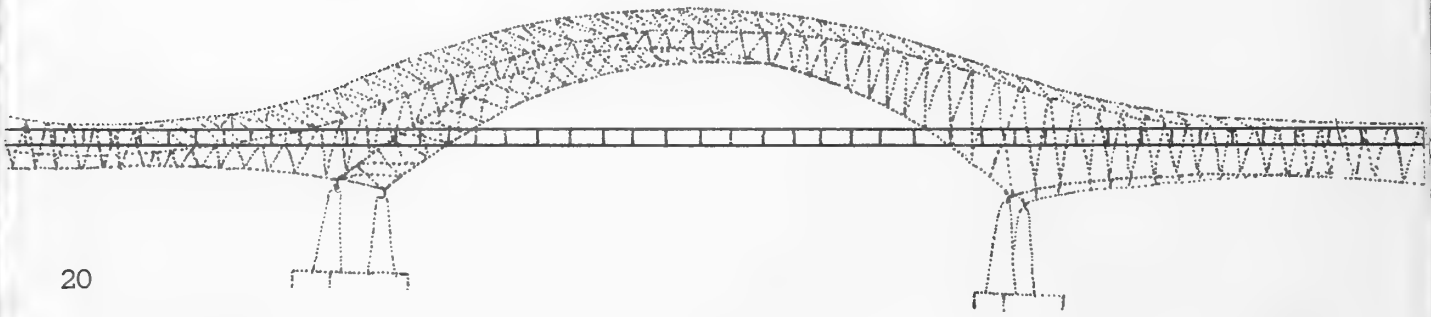
## *Engineers in research . . .*

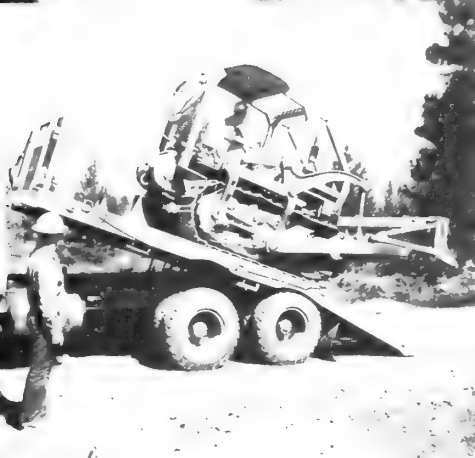
Research is a most important Forest Service activity and Forest Service engineers have major responsibilities in this field. Along with other scientists they make essential contributions to many varieties of research projects related to both the management of forests and the utilization of forest products. In the more general field there is research in connection with transportation methods and systems as well as other engineering aspects of field activities on forest lands.

The internationally famous Forest Products Laboratory at Madison, Wis., has an outstanding record of accomplishment. Here engineers take part in research related to wood engineering, solid wood products, wood fibers, and wood chemistry. Other engineers are employed in forest fire research laboratories at Missoula, Mont.; Macon, Ga.; and Riverside, Calif. These are concerned with fire behavior, detection, and control problems.

The Forest Service engineering research laboratories, which deal largely with the mechanization of field operations, are located at Auburn, Ala.; Bozeman, Mont.; Houghton, Mich.; Seattle, Wash.; and Morgantown, W. Va. They work on the development of improved equipment, systems, and methods, and similar problems of an engineering nature having practical applications in improving procedure and practice on the National Forests.

With few exceptions the laboratories are located in or near a college or university which cooperates with the Forest Service in research programs. Close academic associations are encouraged, and there are opportunities for advanced studies and degrees concurrently with employment on research projects.

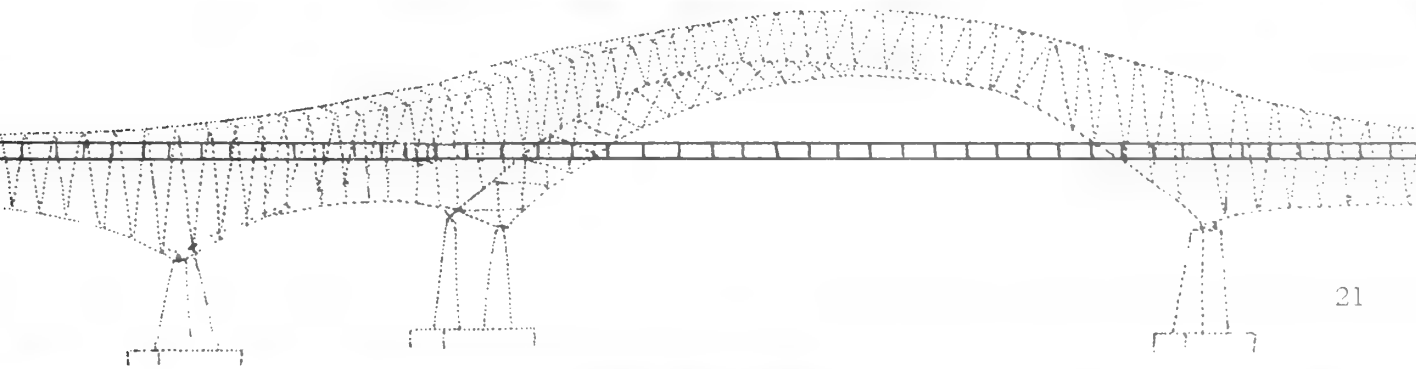




487666



103294







462637

### *Many National Forest jobs require the skills of engineers . . .*

Initiation and subsequent performance and completion of any project is an interesting process. Basically, any work undertaken must relate to a fundamental objective of Forest Service administration. National Forest resources must be available for proper use and must be so protected, managed, and developed as to produce a maximum of benefit for the longtime good of the greatest number of people.

Application of this concept of conservation—called multiple use because it applies to all resources of forest land—requires careful planning. Every National Forest has a project work inventory. Any proposed job stemming from apparent need is studied in relation to general policy and justification. Costs are estimated, benefits are determined, alternate possibilities are studied. Approved jobs are listed in the inventory. Priorities are considered, funds are earmarked, and a job is born.

Now detailed planning begins. This includes selection of standards, calculation of needs (men, money, materials, and machinery), preparing specifications, on-the-ground surveys, inviting bids, and assignment of work crews, supervisory elements, and equipment. Work begins.

This procedure varies somewhat when projects are contracted. In that event, contracts are prepared, negotiated, and executed. In either case—force account or contract work—subsequent activity in the form of supervision and inspection is necessary.

Engineering practices and skills are needed in the performance of most forest work. Engineers frequently have the interesting and stimulating opportunity to practically live with a job from inception to completion.



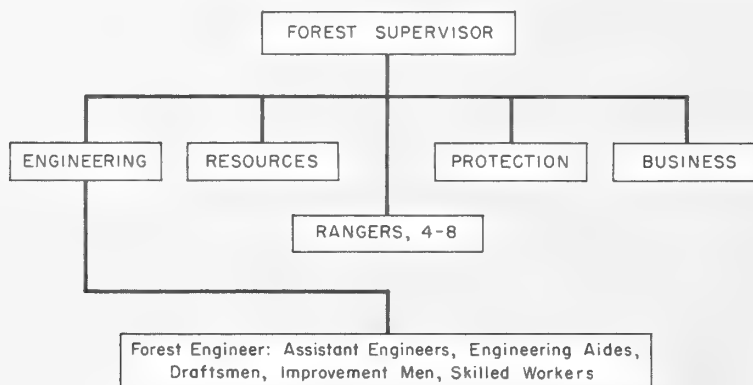
475224

### *A Forest Service Engineer is first a member of a forest supervisor's staff . . .*

A National Forest is administered by a Forest Supervisor who is aided by a number of staff assistants and District Rangers. Each one is responsible for a specific function or group of related activities. National Forest organizations vary somewhat with location and volume of business, but the chart which follows is illustrative of many units.

An engineer entering the Forest Service usually is assigned to the engineering unit of a National Forest and works under the direction of the forest engineer. As he gains experience and knowledge the new man advances in responsibility and grade; in due time he is promoted and placed in charge of engineering activities of a broader scope. During this period he may be assigned to a regional office for a year or two for training purposes.

After successful service as a senior National Forest engineer the individual is likely to be assigned to a responsible staff position in a regional office. He then is a definite prospect for advancement to the position of Regional Engineer. Assignment to the Washington office may follow and in time he may become Chief Engineer of the agency. Advancement is on merit.



## *Employment circumstances are favorable.*

Various features of employment make association with the Forest Service particularly attractive to professional men.

**TRAINING PROGRAMS** are designed to help the new man orient himself to the job rapidly and to advance to more responsible positions in a minimum of time. Both on-the-job training and special group training are utilized.

**OPPORTUNITY FOR ADVANCEMENT** is excellent. An ever-increasing engineering workload, a merit system, and an expanding organization create a situation favorable to unusually rapid advancement.

**SALARY PRACTICE** makes it possible to advance beyond the minimum entrance grade in 6 months. Further promotions are based on merit. At least one year of satisfactory service is required in each grade before promotion to the next higher grade can be recommended.

**AN INCENTIVE PROGRAM** with cash awards for suggestions and exceptional performance. Employees' suggestions are solicited and appropriately recognized. Unusual accomplishments may be rewarded with a pay increase.

**TRAVEL TO THE FIRST JOB** for professional engineer employees is financed by the agency. This applies not only to the new employee but also to members of his immediate family and the transportation of household goods he may own. Necessary travel costs after entrance on duty are financed by the Government. Business travel is usually by Forest Service conveyance or by common carrier at Government expense.

**HOLIDAY, SICKNESS, AND MILITARY LEAVE** provisions are liberal and assure that salary will continue in almost any situation that personal requirements or emergency may bring about.

**LIFE INSURANCE AND HEALTH BENEFIT PLANS** are available to employees on an optional basis. The Government pays a substantial share of the cost.

**THE 40-HOUR WEEK** is standard and normally is made up of five 8-hour days. Ordered overtime is properly compensated.

**RETIREMENT** practices are most liberal and include provisions for dependent survivors. The Government shares with you the cost of a future annuity.

**COMPENSATION FOR INJURY** and job-related disability is provided.

**A UNIFORM ALLOWANCE** is provided for the purchase of required distinctive field clothing. Allowances for replacements are also available.



the forest service engineer helps care for the nation's most valuable and most needed renewable resources.

481341



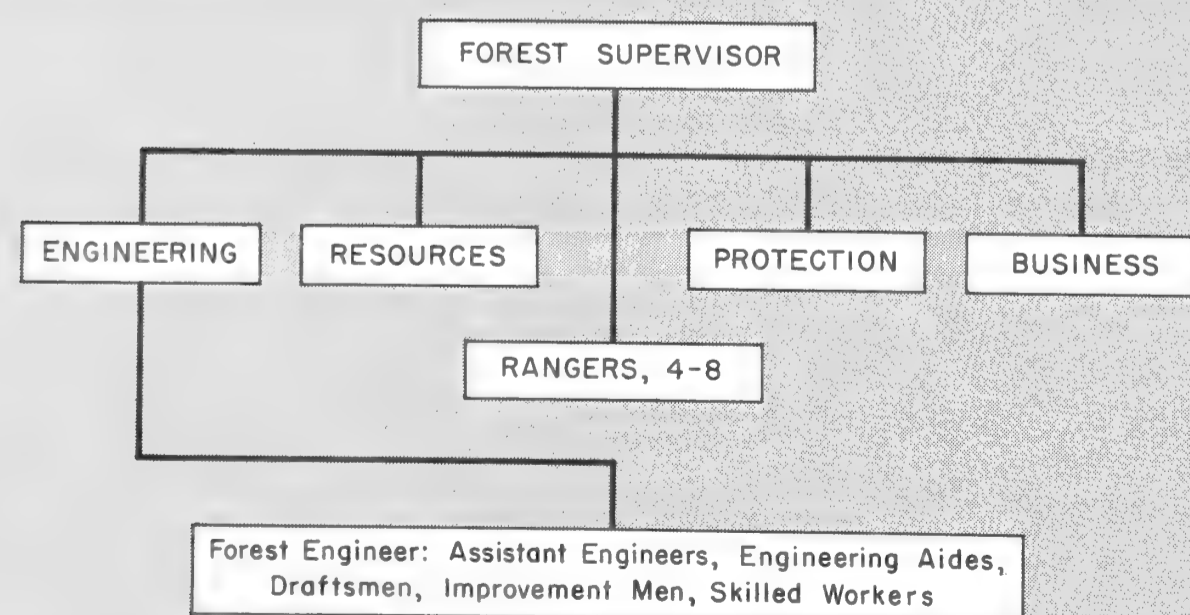
475224

### *A Forest Service Engineer is first a member of a forest supervisor's staff . . .*

A National Forest is administered by a Forest Supervisor who is aided by a number of staff assistants and District Rangers. Each one is responsible for a specific function or group of related activities. National Forest organizations vary somewhat with location and volume of business, but the chart which follows is illustrative of many units.

An engineer entering the Forest Service usually is assigned to the engineering unit of a National Forest and works under the direction of the forest engineer. As he gains experience and knowledge the new man advances in responsibility and grade; in due time he is promoted and placed in charge of engineering activities of a broader scope. During this period he may be assigned to a regional office for a year or two for training purposes.

After successful service as a senior National Forest engineer the individual is likely to be assigned to a responsible staff position in a regional office. He then is a definite prospect for advancement to the position of Regional Engineer. Assignment to the Washington office may follow and in time he may become Chief Engineer of the agency. Advancement is on merit.



### *Employment circumstances are favorable . . .*

Various features of employment make association with the Forest Service particularly attractive to professional men.

**TRAINING PROGRAMS** are designed to help the new man orient himself to the job rapidly and to advance to more responsible positions in a minimum of time. Both on-the-job training and special group training are utilized.

**OPPORTUNITY FOR ADVANCEMENT** is excellent. An ever-increasing engineering workload, a merit system, and an expanding organization create a situation favorable to unusually rapid advancement.

**SALARY PRACTICE** makes it possible to advance beyond the minimum entrance grade in 6 months. Further promotions are based on merit. At least one year of satisfactory service is required in each grade before promotion to the next higher grade can be recommended.

**AN INCENTIVE PROGRAM** with cash awards for suggestions and exceptional performance. Employees' suggestions are solicited and appropriately recognized. Unusual accomplishments may be rewarded with a pay increase.

**TRAVEL TO THE FIRST JOB** for professional engineer employees is financed by the agency. This applies not only to the new employee but also to members of his immediate family and the transportation of household goods he may own. Necessary travel costs after entrance on duty are financed by the Government. Business travel is usually by Forest Service conveyance or by common carrier at Government expense.

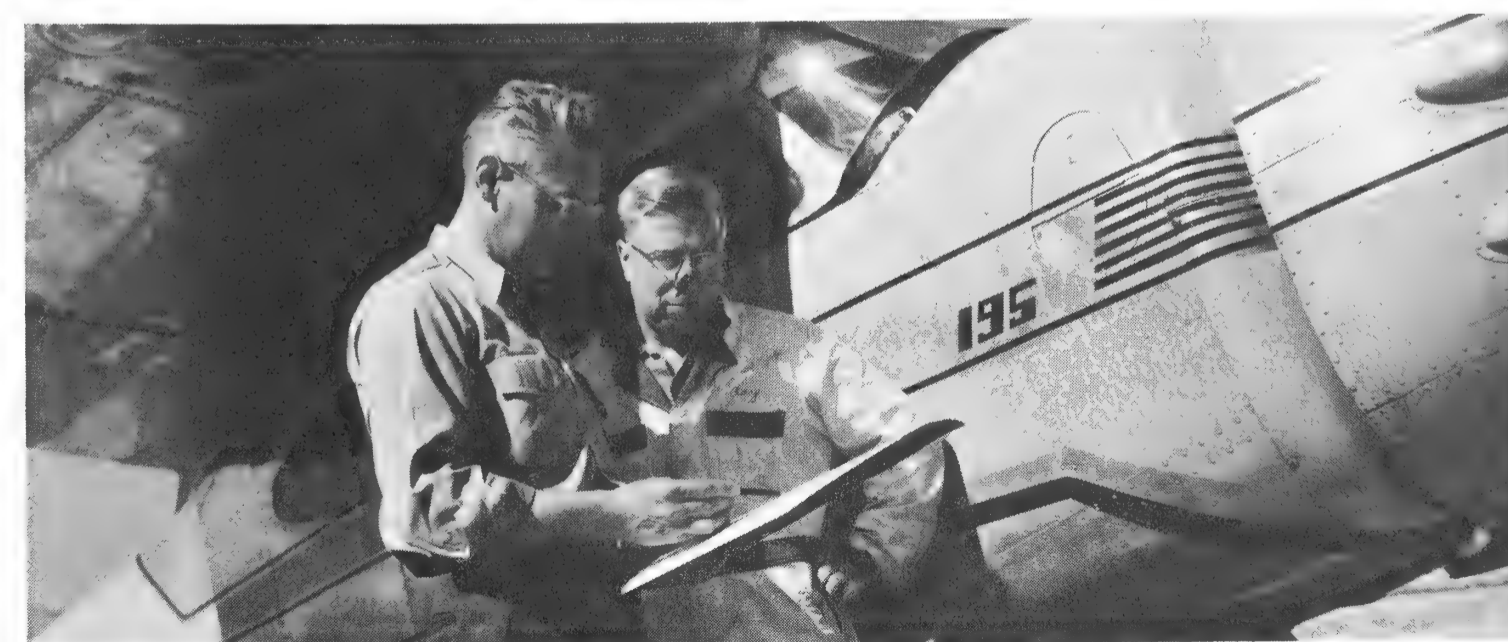
**HOLIDAY, SICKNESS, AND MILITARY LEAVE** provisions are liberal and assure that salary will continue in almost any situation that personal requirements or emergency may bring about.

**LIFE INSURANCE AND HEALTH BENEFIT PLANS** are available to employees on an optional basis. The Government pays a substantial share of the cost. **THE 40-HOUR WEEK** is standard and normally is made up of five 8-hour days. Ordered overtime is properly compensated.

**RETIREMENT** practices are most liberal and include provisions for dependent survivors. The Government shares with you the cost of a future annuity.

**COMPENSATION FOR INJURY** and job-related disability is provided.

**A UNIFORM ALLOWANCE** is provided for the purchase of required distinctive field clothing. Allowances for replacements are also available.



481341

the forest service engineer helps care for the nation's most valuable and most needed renewable resources.





*After-hours associates will represent a  
variety of skills and professions.*

Forest Service employment affords an opportunity to hobnob with just about everyone from elevator boys to board chairmen.

Forest Service work is so highly complex as to require the employment of people representing a very wide variety of skills, knowledges, and professions. A list of work associates, many of them almost daily coworkers, will include accountants, airplane pilots, architects, artists, business managers, clerks, draftsmen, economists, engineers, entomologists, foresters, landscape designers, pathologists, scalers, secretaries, skilled workers of various sorts, soil scientists, wildlife managers, and even an occasional writer.

After-hours associates will, of course, be of your own choosing, but Forest Service people make friends in the communities where they live. Their kids go to school with those of the doctor, lawyer, baker, and candlestick maker. The usual array of social activity is available in almost any community in which a National Forest office is located, and generally is adequate to suit the needs of even the most gregarious kinds of people.



475854

*Summary*

Existing — 65,000 family units  
Needed — 310,000 family units  
Total — 375,000 family units



460309

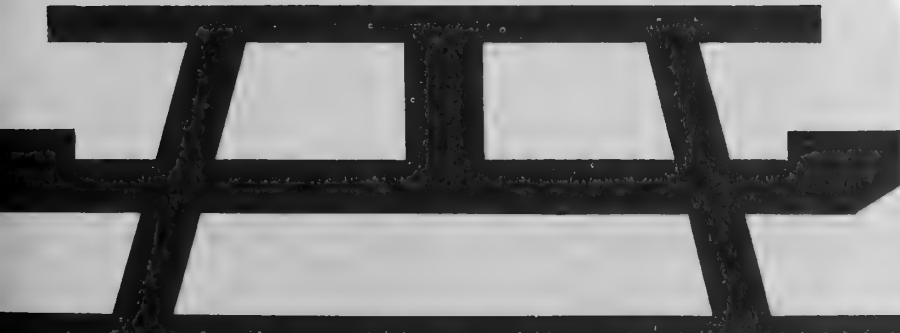


443416

**375,000**



**65,000**

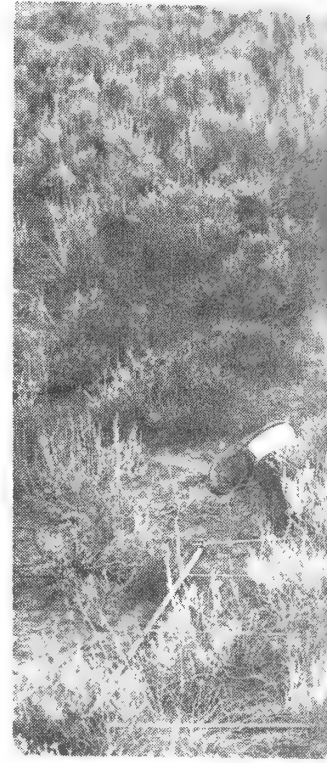


*Your associates will represent a variety of skills and professions . . .*

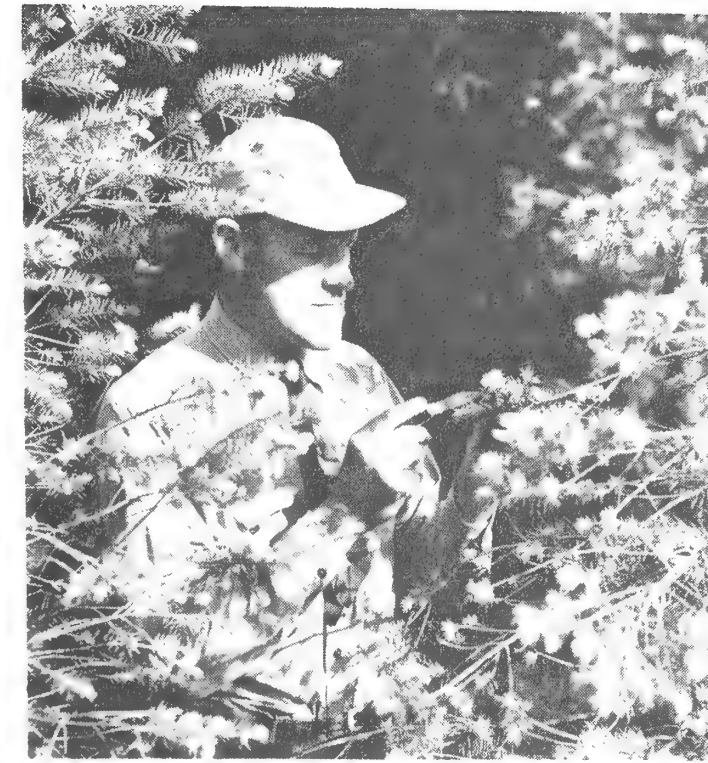
Forest Service employment affords an opportunity to hobnob with just about everyone from elevator boys to board chairmen.

Forest Service work is so highly complex as to require the employment of people representing a very wide variety of skills, knowledges, and professions. A list of work associates, many of them almost daily coworkers, will include accountants, airplane pilots, architects, artists, business managers, clerks, draftsmen, economists, engineers, entomologists, foresters, landscape designers, pathologists, scalers, secretaries, skilled workers of various sorts, soil scientists, wildlife managers, and even an occasional writer.

After-hours associates will, of course, be of your own choosing, but Forest Service people make friends in the communities where they live. Their kids go to school with those of the doctor, lawyer, baker, and candlestick maker. The usual array of social activity is available in almost any community in which a National Forest office is located, and generally is adequate to suit the needs of even the most gregarious kinds of people.



475854



460309



443416

**CAMPGROUNDS**

Existing — 65,000 family units  
 Needed — 310,000 family units  
 Total — 375,000 family units

**375,000**

**65,000**







492333

## *Life in the Forest Service . . .*

A few National Forest headquarters are located in large cities—Los Angeles and Seattle, for example. Some are in smaller cities and towns. However, the great majority of the units are headquartered in small cities of 10 to 20 thousand population. These are sufficiently large so that adequate and suitable housing, schools, churches, stores, shops, and other necessary facilities are available, and sufficiently small so as to avoid the trials of a big-city commuter. Travel to and from work is brief.

Men with families are not placed where facilities for family life are inadequate. In some locations the Forest Service builds residences for its people. In all cases it makes every effort to see that satisfactory living conditions are to be had where a family is located. The employee is aided in finding a home.

The Forest Service domain might by inference be thought of as a man's world, but in fact circumstances are favorable for family living. Forest Service men are family men. Like most engineers, the Forest Service Engineer must expect to do some traveling, and to spend some time away from home. The work is largely outdoor and some of it may be performed at distances which prevent returning home every evening.

Forest Service people are transferred at intervals, not for the convenience of the agency, but to develop them—to broaden their experience and help prepare them for greater responsibilities. Promotion frequently accompanies transfer. The Forest Service pays all the relocation costs for moving of the family and household goods. Funds can be advanced before the move is made.

Forest Service employment is especially attractive to those who like outdoor activities. After the fifth 8-hour day of each week they normally have ready access to the finest in outdoor sports. For urban tastes community social activities are available.

In any job a little of the bitter sometimes must be taken with the sweet. Certainly the suppression of a forest fire may entail long hours and hard, unpleasant work under trying circumstances. Emergency action in natural disasters or assisting in a search for lost people, as occasionally happens, may involve some unpleasant features. All in all, though, the work of a Forest Service Engineer and the life of his family are healthy, happy, and stimulating. Their associates are congenial people.



### *Life in the Forest Service . . .*

A few National Forest headquarters are located in large cities—Los Angeles and Seattle, for example. Some are in smaller cities and towns. However, the great majority of the units are headquartered in small cities of 10 to 20 thousand population. These are sufficiently large so that adequate and suitable housing, schools, churches, stores, shops, and other necessary facilities are available, and sufficiently small so as to avoid the trials of a big-city commuter. Travel to and from work is brief.

Men with families are not placed where facilities for family life are inadequate. In some locations the Forest Service builds residences for its people. In all cases it makes every effort to see that satisfactory living conditions are to be had where a family is located. The employee is aided in finding a home.

The Forest Service domain might by inference be thought of as a man's world, but in fact circumstances are favorable for family living. Forest Service men are family men. Like most engineers, the Forest Service Engineer must expect to do some traveling, and to spend some time away from home. The work is largely outdoor and some of it may be performed at distances which prevent returning home every evening.

Forest Service people are transferred at intervals, not for the convenience of the agency, but to develop them—to broaden their experience and help prepare them for greater responsibilities. Promotion frequently accompanies transfer. The Forest Service pays all the relocation costs for moving of the family and household goods. Funds can be advanced before the move is made.

Forest Service employment is especially attractive to those who like outdoor activities. After the fifth 8-hour day of each week they normally have ready access to the finest in outdoor sports. For urban tastes community social activities are available.

In any job a little of the bitter sometimes must be taken with the sweet. Certainly the suppression of a forest fire may entail long hours and hard, unpleasant work under trying circumstances. Emergency action in natural disasters or assisting in a search for lost people, as occasionally happens, may involve some unpleasant features. All in all, though, the work of a Forest Service Engineer and the life of his family are healthy, happy, and stimulating. Their associates are congenial people.

492333









462696

### *What it takes to be a Forest Service Engineer*

To meet the technical requirements for appointment to a professional engineering position, the applicant should have a suitable degree based on successful completion of a 4-year curriculum approved by the Engineers' Council for Professional Development. Civil, mechanical, and electrical engineers make up the largest group employed by the Forest Service. Those holding degrees in other disciplines may be considered eligible for appointment, depending on the individual's qualifications and the Civil Service classification standards established for the position to be filled. The applicant must be an American citizen and be able to pass a moderate physical examination.

Scholastic standing, advanced degrees, and any postgraduate professional experience are given consideration in establishing the initial appointment grade and salary. For those holding bachelors' degrees, additional study is encouraged and duty assignments and hours may be suitably adjusted for those who want to take part-time work when it is conveniently available.

Other qualifications for a successful career as a Forest Service engineer are of a more personal nature. Most important is that the engineer should have a natural liking for the type of work and the sort of life he will be called upon to lead. Good health and a sound constitution are desirable. Once the engineer has been appointed and his probationary period completed successfully, further advancement depends on the individual's ability and the other qualifications he is able to demonstrate. When the engineer has advanced beyond an assistantship, he will have charge of others. Then his effectiveness in planning, directing, and leading will become relatively more important.



We would like to hear from you.



*For more detail . . .*

Address an inquiry to the Chief, U.S. Forest Service,  
Department of Agriculture, Washington, D.C., 20250,  
or to the Regional Forester at any of the following  
field addresses:

Federal Building, Missoula, Montana, 59801  
Federal Center, Building 85, Denver, Colorado, 80225  
Federal Building, 517 Gold Avenue SW., Albuquerque,  
New Mexico, 87101  
Forest Service Building, Ogden, Utah, 84403  
630 Sansome Street, San Francisco, California, 94111  
Post Office Box 3623, Portland, Oregon, 97208  
6816 Market Street, Upper Darby, Pennsylvania, 19082  
50 Seventh Street NE., Atlanta, Georgia, 30323  
710 N. Sixth Street, Milwaukee, Wisconsin, 53203  
Post Office Box 1631, Juneau, Alaska, 99801

REVISED NOVEMBER 1963

U.S. GOVERNMENT PRINTING OFFICE : 1963 O-708-080

---

For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 20402 - Price 40 cents



