

# The MICHIGAN ALUMNUS

The Alumni—"In a very just sense and in a very large degree the fortunes of the University are committed to your hands."—Dr. James B. Angell.

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## Progress in the School of Forestry and Conservation

Dean Samuel T. Dana Outlines the Development of the School During the Past Year and Its Plans for the Future

**A** YEAR ago the School of Forestry and Conservation was a mere hope. With the removal of the limitation on the mill tax fund it became a reality on September 1, 1927. Today it is a lusty infant of nine months and has already developed growing pains.

The chief progress of the School during its first year has perhaps been in personnel. Six new men have been added to the Faculty in the fields of forest economics, forest management, wood technology, forest entomology, forest zoology, and forest extension. These come from many different forest schools (Cornell, Iowa, Michigan, Minnesota, Toronto, and Yale), and bring to the University a wide variety in training and experience. More important still, their ideals and personalities are such as to give the Faculty a unity of purpose and an ability for team work which not all faculties possess.

So far as student personnel is concerned, there has been little change in the number of undergraduates. There has, however, been a marked increase in the number of graduate students. For the first time three foresters are studying for the degree of Doctor of Philosophy (in forest entomology, forest pathology, and forest mensuration), with the prospect another year of several additions to their ranks. Since the School has from the outset adopted quality rather than quantity as its slogan, this is an exceedingly encouraging development. For the future there is every reason to anticipate a gradually increasing attendance of students of high calibre, particularly in the graduate group.

Marked strides have been made in building up the School's technical equipment. Through the generosity of the Regents the old

*Greatly Increased Emphasis on Conservation, More Research, Extension of Instructional Activities and Greater Opportunities for Graduate Specialization are now Possible*

hospital heating plant has been made available for a wood utilization laboratory, a purpose for which it is well adopted. Timber-testing machines, a wood-preservation plant, and a modern dry kiln will be installed in the laboratory this spring, with prospects of other additions later.

The rooms in the basement of the Natural Science Building formerly occupied by the timber-testing machines will be used for the new Forestry Library, which will have a librarian of its own. A special book fund has been provided for the filling of existing gaps, together with increased appropriations for keeping abreast of current literature. There is every reason to believe that in a few years the Forestry Library, the importance of which can hardly be overestimated, will be much the best of its kind in this part of the country.

**T**HE offering of new forestry courses has been accompanied by an expanded program of forest research. Many members of the Faculty are conducting original studies in their respective fields, and two special investigations have been undertaken. These involve a study of the private game refuges of the State by Professor H. M. Wight, formerly of Oregon State College of Agriculture and of Iowa State College, and a survey of the fur resources of the State by Dr. Ned Dearborn, formerly of the Biological Survey and more recently connected with private fur farming enterprises. Individual grants have been made from the Faculty research fund for a study of the bronze birch borer, one of our dangerous forest insects, and for certain fundamental investigations in the field of silvics.

Valuable contacts have been established with various organi-



A VIEW ACROSS THE LAKE AT SAGINAW FOREST

zations and individuals in the State. Two meetings have been held with interested timberland owners and operators which resulted in the formation of a special committee, representing both the Upper and Lower Peninsula, for the consideration of matters of mutual interest. At the suggestion of this committee the School has undertaken to distribute at occasional intervals mimeographed news notes giving the preliminary results of studies under way and other items of current interest. Cooperation on specific projects has been arranged with the State Department of Conservation and with the Lakes States Forest Experiment Station.

Plans for the future contemplate further strengthening of the Faculty, improvement of the curriculum, expansion of the work in "conservation," increased emphasis on research, and development of extension activities. Many of these things, of course, tie together, and most of them demand additional resources.

ONE of the most interesting and important tasks which the School has undertaken is the revision of the curriculum. With the constantly broadening scope of forestry and the growing opportunity for specialization, it has become increasingly clear that the standardized course of study which sufficed for an earlier generation must be made more flexible. Plans are accordingly being worked out by which a minimum amount of work in certain fundamental subjects will be required of everyone receiving a degree in forestry, while at the same time considerable freedom of election will be allowed. While assuring a sound basic training for everyone, this will also permit those who really know what they want to do after graduation to prepare themselves more effectively and without loss of time for their chosen field.

This does not imply that anything approaching specialization will be possible in a four or even a five-year course. Work leading to a doctor's degree is essential for real specialization, and will be encouraged for those with special interest and ability. For the average man who desires to go into administrative work rather than into teaching or research, it is hoped that the five-year curriculum leading to the degree of master of forestry will gradually become the standard.

Expansion of the work in "conservation" con-

stitutes an urgent need which will be met just as rapidly as resources are available. This is not only an extensive but a nearly virgin field. The management of game (both mammals and birds), the production of fur-bearing animals (both wild and in farms), fish culture, recreation in relation to other forest uses, and the influence of forests on the water supply are some of its more obvious phases. Full development of these will lead to many problems in the field of natural science, as in pathology and genetics, and also, because of the human relationships involved, in the fields of economics and social science. When the forests are looked at in their true light as producers not only of wood, but of many other indispensable resources all of which are interrelated, then management becomes doubly fascinating as well as doubly difficult.

### President Roosevelt on Forestry

AND now, first and foremost, you can never afford to forget for one moment what is the object of our forest policy. That object is not to preserve the forests because they are beautiful, though that is good in itself, nor because they are refuges for the wild creatures of the wilderness, though that, too, is good in itself; but the primary object of our forest policy, as of the land policy of the United States, is the making of prosperous homes. It is part of the traditional policy of home-making of our country. Every other consideration comes as secondary. The whole effort of the Government in dealing with the forests must be directed to this end, keeping in view the fact that it is not only necessary to start the homes as prosperous, but to keep them so. That is why the forests have got to be kept. You can start a prosperous home by destroying the forests, but you cannot keep it prosperous that way."—*From an address by President Roosevelt to a meeting of the Society of American Foresters in 1903.*

HAND in hand with instruction in these various branches of forestry must go a never-ending search for information. One of the major functions of the School is to add to our comparatively meager store of knowledge as to how to increase the output, improve the quality, and make more efficient the utilization of forest products of all kinds. Research is an activity in which every teacher should participate both because of its mental stimulus and broaden-

ing influence and to supply him with new and better tools for use in his profession. With adequate support, which might well take the form of special endowments, there is every opportunity for the University of Michigan to become an outstanding center of forest research.

Still another plan of the School is to extend its instructional activities beyond the University's walls. Forestry is a matter which so intimately affects the welfare of every citizen of the State and which is so dependent for its progress on public understanding and support, that an educational program which confines itself to the training of professional foresters is clearly incomplete. An effort will therefore be made to impart some of the more essential information concerning forestry to the general public and more particularly to the school children of the State, not as isolated facts but as an integral part of their regular studies. With the assured cooperation of the public school authorities and other interested agencies, I am confident that in the long run this will prove to be a service of exceptional value.



Finally, the outstanding goal of the School of Forestry and Conservation is to do its part in making one of our basic resources—the forests—of the greatest permanent value in the life of the nation. This will require professional competence of the highest order in a wide variety of fields, coupled with the ability to knit those fields together to the advantage of a larger whole. Still more it

will necessitate a point of view and an ideal of public service which sees forestry not as an end in itself but as a means of contributing in a thousand ways to making life more comfortable and more worth-while not alone for the timberland owner and the wood user but for all. The opportunity is here. The alumni may rest assured that every member of the Faculty will do his best to take advantage of it.

## Aims in Forest Education

By Donald M. Matthews, Professor of Forest Management

SHOULD foresters be specialists? This is not a rhetorical question, but a real one requiring an answer. The majority of people having any idea of what a forester does, or what they think he should do, would answer unhesitating that he should be. They would be right just in so far as they would be right in saying that a lawyer, or a doctor, or an engineer should be a specialist and no further. Specialists in all these fields develop, but they do not, at the start, pick that narrow branch of their profession in which they later achieve eminence and train themselves for that branch alone. A thorough knowledge of all branches

of a subject is the only way to achieve competent specialization in any one branch, and even then, the specialist only appears as the result of experience, backed by education, and not by training alone.

Something over a quarter of a century ago some of our universities began to offer special courses in forestry, usually connected with, or included in, the curricula offered in natural science. Men taking such work were said to have had "training in forestry," and so the somewhat unfortunate phrase, "trained forester," arose. Real education in the profession has progressed far since then. Gradually the demand for men competent to handle and direct the forest business of the country has increased, and in place of a few courses which did little more than direct the attention of the student to a field of work in which he might go as far as he liked, provided he maintained his own interest in the subject, complete curricula are now offered



RESEARCH AS CARRIED ON IN THE WELLEQUIPPED LABORATORIES

*Most of the Forester's Laboratories, however, are out-doors*

in many colleges and universities and separate schools of forestry have been established by some. But the idea that it is a "training" and not an "education" which is offered in these schools still persists.

THE concept of forestry as a profession in the broader sense is slow of general appreciation, and this explains an attitude toward the study of the subject which is rather unfortunate. From an educational standpoint this attitude has tended to segregate the profession as one entirely distinct from other lines of education. Two points of view have been taken: one that the subject is a distinct specialty to be taken up only after a general cultural education has been obtained, and the other that it is a subject requiring only a purely vocational training of little, if any, broad educational value. Both points of view are misleading and





TRANSPLANTS FROM THE SCHOOL NURSERY  
*This Nursery, Supplies the Stock for Planting the  
 University Forest Properties*

yet as hard to change as most premises based on half-truths generally are. In forestry, as in the other professions, both the specialist and the technician find their places, but the broad field of work belongs neither to the one or the other.

The fact that our forests cover a greater area than all our cultivated farms and that the industries dependent upon them rank fourth in the nation has a significance which cannot be ignored. Much has been said comparing the forest to a farm and emphasizing the fact that forest crops, like farm crops, are renewable. But they are renewable only after years of patient and far-seeing management. The technician can plant them and tend them, under direction, and the specialists can aid in the solution of technical problems as they arise, but can we leave it to them to direct the forest business of the country—a business different from others in that decisions made today have to stand the test of half a century or more of changing conditions? It would seem apparent that we cannot and that the broadly competent professional forester should be less a specialist and more a man with a thorough knowledge and appreciation of the economic problems which parallel, or run counter to, those of his own field than is generally necessary with other professional men equally competent in their fields.

**T**HIS is no plea for less technical training for foresters, but only for a better appreciation of what a forest education offers and how it should be approached. It is not a mere training in the technique of handling woodlands; a "tool" among others in the mental kit-bag of the practitioner. Nor is it one so divorced from other branches of education that it has to be approached along a separate line with at most only a narrow field of previous preparation which will prove of use. There is nothing occult or mysterious in the business of growing trees or managing existing forests. It is a business, like any other, and has its own particular problems; narrow when a particular tree or

small group of trees has to be dealt with, but broad and far-reaching when extensive forest properties or regional forest areas are considered. Mere technical knowledge will not suffice to successfully deal with them, necessary as it is. Neither are the subjects generally offered in a forest school—silviculture, dendrology, utilization, management, etc.—so specialized and inter-dependent that they are shut off from all but those individuals who have definitely decided to take up the profession. All of us know something about engineering problems in this mechanical age; of necessity we acquire a certain amount of medical knowledge; and few of us would be able to conduct our ordinary personal business without some knowledge of law. And so with forestry—in general it should be of interest to all, and a more intimate knowledge of some of the basic subjects with which a forester deals would probably be of particular value to others besides the strictly professional forester.

Thus the engineer who plans and constructs large conservancy projects cannot ignore the relation of forest cover to the regulation and control of streamflow; the manufacturer who utilizes wood to a large extent in his industry would find the study of the identification of wood and of its physical and chemical properties of value and interest to him in his manufacturing processes; and the owner of properties partly or wholly forested, or the banker who is called upon to make loans with such properties as collateral, would find the forester's study of the financial side of his business, the costs of management of a forest business and the calculation of the probable financial returns of great benefit in assessing values and planning for betterments. These are everyday problems in the forester's life, but their solution is more often dependent upon the right viewpoint rather than upon technical training. One does not have to be a technical forester to get this viewpoint any more than one needs to be a practicing lawyer to know whether a contract as drawn is a sound instrument in law. Special cases will always arise where professional advice is indicated, but a forest school can and should offer courses of study which will be of educational value and interest to others as well as those who definitely plan to take up the profession.

**N**EVERTHELESS, the tendency in forest schools has been rather toward than away from specialization. It is as if the profession had accepted the general attitude, and having been styled specialists, had determined to justify the appellation. This has been a natural reaction, and the value of intensive training should not be discounted, but while it meets the needs of the individual, pre-determined, professional forester, it narrows the field from which competent ability may be directed into the profession and prevents a more general appreciation of the broad field of work which is forestry and the real cultural and educative value which attaches to a well-balance study of the subject.



It would appear that if we are to attract to the profession men of the caliber required to pilot the forest business of the country through the difficult years which lie ahead, and if we are to have more sympathetic cooperation on the part of the thinking public generally, the time has come to lift education in forestry out of the narrow groove of specialization and place it on the highway of general knowledge. To this end the curriculum of the School of Forestry and Conservation at the University of Michigan is undergoing revision. Without for a moment ceasing to emphasize the importance of a thorough grounding in the underlying sciences and the basic forest subjects, or suggesting

that students should be satisfied with anything less than the five-year course leading to the professional degree, the list of minimum requirements in both forestry and non-forestry subjects will be reduced, with a consequent less rigid curriculum and more opportunity for the student to obtain a thorough forestry education which cannot, from any standpoint, be considered a narrow one. It is anticipated that this will have both the effect of broadening the field from which men can be expected to enter the profession and also that of permitting the School of Forestry and Conservation to function as an integral part of the University rather than as a purely technical unit.

## University Starts Extension Work in Forestry

By Shirley W. Allen, Professor of Forestry

THE School of Forestry and Conservation at the University of Michigan is now definitely in the field of forestry extension work. It will seek by this means to get forestry better and more widely taught in the public schools with helps which can be used in existing courses, particularly nature study, geography, civics, manual training, general science, history, zoology, English, and mathematics. Forestry extension will also reach service clubs and similar organizations in an effort to crystallize interest and bring about definite forestry accomplishment.

When there is news of great destruction of life or property by forest fires, or when too many

Christmas trees are left unsold at public markets, we are likely to hear some one say, "There ought to be a law, etc." That expression represents the man's total remedy and his only suggestion for maintaining adequate forests. Better informed and more thoughtful people are shocked when they see great areas of cut-over land, or when fishing streams lose their charm and their fish, or when every possible picnic spot for miles is found to be littered with papers and tin cans. With these abuses in mind, they demand in a confused way that something be done about it. The School of Forestry and Conservation at the University, too, knows that effort must be speeded up not only to restore beauty to marred landscapes but to make certain that the forests of the country are maintained as a source of

raw lumber and of innumerable other benefits.

The School of Forestry and Conservation believes that a thoroughly informed public will bring about such effort and no public can be better informed than one which

has grown up with the knowledge of forests and their intimate prosperity. It is well to start with the boys and girls in our schools. There is opportunity to make facts about forests a real part of many school subjects. Some of the things which boys and girls are interested in are these: How do forests grow? What are they worth? What is happening to them in Michigan and throughout the country? Can money really be made by growing forests on cheap idle

land? What starts all the forest fires? How fast will a forest fire travel? Can you start a forest fire with a discarded cigarette? Do Michigan's industries need forests? Certainly the answers to these questions have social as well as scientific application and they may be multiplied many times over.

THE School of Forestry and Conservation knows that there is a demand for the right kind of forestry material to use in public school teaching. The State Departments of Education and Conservation, the School of Education, the University Extension Division, and other interested agencies have assured us of cordial cooperation in the work proposed.



THE CABIN AT SAGINAW FOREST  
which holds memories of many good times



While some lectures, using films and lantern slides, and perhaps field trips, will be arranged at schools visited by representatives of the University, the main object is to get forestry taught by the regular teachers in connection with other subjects as part of the regular school work. Help will also be given in establishing school forests, in planning programs and exhibits for students' clubs, and in other creative projects.

Another feature of the new service will be suggestions to chambers of commerce and service clubs with the idea of giving constructive outlet to grow-

ing interest in forestry among such organizations. Examples of what can be undertaken by such groups are establishment of municipal and county forests, sponsoring of Scout forests, guiding local observance of Arbor Day, American Forest Week, and other occasions designed to focus thought on trees and forests. In a broad sense the extension work in forestry which the University has established will help to put Michigan back in the ranks of the forest producers, enabling her better to supply raw materials for industries and to furnish a finer background for healthful outdoor recreation.



ONE OF THE WINDING ROADS  
in Experimental Tree Plantations of Saginaw Forest



FORESTERS GAIN PRACTICAL EXPERIENCE  
in planting old fields at Stinchfield Woods

## The University Forest Properties

*E. V. Jotter, Assistant Professor of Forest Administration, Describes School Possessions*

**T**HAT a forester cannot learn the fundamentals of his profession unless he can practice what is being preached is a recognized principle in the teaching of forestry at the University.

Because of the early recognition of the necessity for a forest in which students can carry on field practice in planting, thinning, protection, improvement, and all the other business of forestry, there is now available for regular use Saginaw Forest, established about twenty-five years ago through the generous gift of the Honorable Arthur Hill of Saginaw. The tract is only three miles from Ann Arbor on Liberty Street.

More than fifty distinct forest plantations are in various stages of development on this eighty-acre tract, which is regularly used by the forestry students.

Besides affording a good opportunity for teaching forestry, this tract, as well as the others more recently acquired, makes possible the collection of valuable research data, which will help solve the

many problems incidental to the development of Michigan's low value areas into profitable assets.

The educational value to the general public of these tracts is another form of use limited only by the need for protecting the areas from fire and other forms of damage.

**E**BER WHITE woods, obtained by purchase more than ten years ago, is a native hardwood tract of forty-three acres, at the city limits, now being managed as an all-aged forest. It has been divided into compartments which are cut over at ten-year intervals. Accurate records of the costs of management and the financial returns are kept for this as well as for the other forest areas.

Stinchfield Woods, the most recent acquisition, is a 320-acre property consisting of open fields and woods, not far from Portage Lake, and about seventeen miles from Ann Arbor. Funds for the purchase of this area are a memorial gift of Mrs. Annie Tilson Stinchfield. Opportunity for research prof-



lems involved in the establishment of forests on a commercial scale, besides giving students greater and more varied forms of forestry practice, are afforded by this tract.

Planting stock for reforesting these areas is grown in a two-acre nursery, which has been developed in connection with the University Botanical Garden near Ann Arbor. Here again students do most of the work from the preparation of seed beds to the shipment of stock to the planting areas.

These properties are of value for demonstration and instructional purposes and to a limited extent as field for research in forest problems. Additionally, there is a real need for ownership or control of larger tracts of land in other parts of the State which will be more representative of the various forest problems which Michigan now faces in com-

mon with her sister states of the lake region. These problems are not only those of forest establishment, management and utilization of the timber crop, etc., but also include those which arise out of any true conservation program aiming to control wisely the use of forests for the production of wild life and for recreational purposes.

When such tracts of land are acquired the responsibility of ownership will also be incurred and it is probably that land will have to be selected which cannot be under the immediate personal supervision of the staff of the School of Forestry at all times. For this reason any land so acquired should be in one locality and of sufficient area to promise reasonable financial returns in the future and with provision for meeting the costs incident to its competent management and upkeep.

## Forest Entomological Work at Michigan

*S. A. Graham, Associate Professor of Forest Entomology; Describes This Field of Work*

**N**O forester, especially one who has witnessed the destruction wrought by such insects as the bark beetle, the larch sawfly, or the spruce budworm, has ever doubted the importance of insects as forest devastators. Nevertheless, foresters in the past, often feeling that the control of these pests is so difficult and expensive as to be prohibitive economically, have closed their eyes to entomological problems until an outbreak has forced their attention in that direction. But we are now rapidly coming to take a different view of forest entomology and almost without exception we realize that forest insect control, especially control by preventive means, is not only economically possible but is even more than that; it is an economic necessity.

Because of this necessity and because of the need for finding new and more economical methods of control there is now a steady and growing demand, particularly in government work, for men who have special training in forest entomology, and it seems altogether probable that a demand for more teachers of forest entomology may soon develop. In order to help satisfy these needs the School of Forestry and Conservation offers opportunities for advanced study in forest entomology. We feel that a

forest entomologist should first of all have a sound fundamental forestry training as a foundation on which to build his special training. Therefore men are not encouraged to specialize until they have completed their basic forestry work. Only a limited amount of specialization is possible even in the fifth year leading to the master's degree. It is not until a student enters upon his work for the doctorate that he can actually be considered a specialist. The training for specialists in forest entomology consists of a certain amount of course work in forestry and science coupled with a considerable amount of original research.

The obligation of the School of Forestry does



CROSS-SECTION WORK AT THE BIOLOGICAL STATION



not cease with the fulfillment of its teaching duties. It is also expected to contribute its share to the advance of forestry knowledge. In entomology as in other lines this phase of the work is not being neglected. The research work in forest entomology in the School is now organized in cooperation with the Lake States Forest Experiment Station, and the Bureau of Entomology. For the present at least the University of Minnesota is also cooperating.

THE projects that are now receiving the greatest attention are of importance not only to the State of Michigan but also to the other Lake States and even to the New England States as well. These projects are concerned primarily with a study of defoliators and their effects upon the forest. The species that are now being studied most intensively are the spruce budworm, the larch sawfly, the jack pine sawfly, and in addition to these three important defoliators, work on the bronze birch-borer, supported by a special grant from the University research fund, is also in progress.

All four of these insects are especially important in the Lake States. The spruce budworm during the past fifteen years has killed a volume of balsam fir and spruce estimated at over 10,000,000 cords. And in the lower peninsula of Michigan and in Minnesota it has also attacked and severely injured jack pine. The larch sawfly, one of the other species receiving special study, has also been responsible for the death of millions of feet of tamarack timber and is now causing one of the most serious problems that must be solved before our vast area of swamp forest can be handled to the best advantage. The jack pine sawfly, a close relative of the larch sawfly, is an insect that was new to science a few years ago but it has during the last five years caused serious injury in the jack pine forests in some localities and has threatened to do still greater damage. The bronze birch borer is of especial importance in connection with selective logging in the northern hardwood type. Open stands of birch are especially susceptible to the attack of this

insect whereas dense stands are practically immune. To what extent birch forests may be thinned without opening them to probable attack by the borer is one of the important facts that must be determined before selective logging can be conducted with the maximum of safety and profit. This we are attempting to determine. The solution of these and other forest entomological problems will mean much for the safety of forest property in the Lake States.

In teaching students who do not expect to specialize in the subject, the new School of Forestry at Michigan is falling in line with forest progress in attempting to place forest entomology on a sound basis. Opportunities for training in this line are now being offered which are intended to meet the needs of those students who do not expect to specialize in forest insect work as well as those who do.

For the student who does not plan to specialize in this kind of work a one-semester course in principles of forest entomology is offered. This course, as the name indicates, deals primarily with principles and only contains a limited amount of taxonomic and life history work. As many of the important forest insects as time will permit are discussed, but they are selected with the idea of illustrating principles without attempting to take up every important species. The aim of this course

is to give the student a modern viewpoint of forest entomology, to show him where to find information on forest insects, to give him an idea of the kind of insect problems with which a forester is likely to come into contact, and to show him in general how some of the important forest insect problems may be approached. No further courses are required of the general student but more advanced courses may be elected if he so desires.

Thus the School of Forestry and Conservation has attempted to organize its work in forest entomology in a way that will satisfy its obligation in this field. Not only is an effort being made to offer students in forestry adequate training but the School is making an effort to add to our knowledge of forest insects and their control through research.



PAUL BUNYAN'S FAVORITE  
A White Pine Forest

## The Place of the Forester in Wood-Using Industries

By W. Kynoch, Associate Professor of Wood Technology

ONE of the most interesting of modern developments in the investigative field is research in connection with wood, a material which has been used by man for tens of thousands of years, which is steadily increasing in economic im-

portance today, but regarding which practically nothing in the way of exact data existed until a comparatively recent date.

It is the practically invariable experience that any material subjected to intensive scientific study





1915



1920



1925

TEN YEARS OF DEVELOPMENT OF THE WHITE PINE PLANTATION AT THE SAGINAW FOREST

becomes more valuable industrially and the work already done convincingly demonstrates that this is true of wood. During recent years intensive research has led to the acquisition of much valuable information regarding wood properties.

The gap between the obtaining of results by the investigator and the application of those results in actual practice has, however, been difficult to bridge. Where the concern or industry which expects to make use of the findings directly finances the research, delay in this respect should be reduced to a minimum. Where the investigator and the potential user are not directly associated, however, it is likely to be at a maximum.

It does not follow that industry is to blame because it does not immediately act upon the researcher's conclusions. Various factors tend to prevent the application of laboratory results in commercial practice. Perhaps the most important of these is the fact that, while our knowledge is very far indeed from being complete, its extent and character are already such that special technical training is required before it can be applied to anything like the fullest advantage.

**T**HE task of scrutinizing practice in any wood-using industry or individual concern, with a view to applying those research findings by which economies may be effected or revenue produced in the particular case in question, is emphatically one which demands the services of men with sound training in such matters as the structure, physics, mechanics, chemistry, and pathology of woods, men who can become the connecting links between the research organizations and the manufacturing plant. The wood-using industries of today need men of this kind, with a forestry background, if they are to keep pace with their competitors, who are certainly not slow to employ well qualified technical men in their own fields.

It is one of the aims of the School of Forestry and Conservation to provide facilities for the training of men who can be of service to the wood-using industries in the manner indicated. In furtherance of this aim plans are being advanced for the installation of at least one lumber-drying kiln, pro-

vided with all necessary instruments and accessory apparatus, a fully equipped wood-preserving plant designed to operate at pressures up to 200 pounds to the square inch, additional machinery and equipment for study of the mechanical and physical properties of woods, and improved facilities for the study of the structure of woods with special reference to properties and industrial uses.

The new equipment will be of the best and the most modern type and will be commodiously housed in a building now being remodelled for its reception. The floor area of that portion reserved for the kilns and wood-preserving plant is approximately forty feet by seventy feet, and will provide ample working space around these units. The testing machinery and accompanying wood-working equipment will be located in a contiguous part of the building of about equal size.

It is expected that at least the major part of the new equipment will be in place and ready for work by September of this year.

The new facilities, which are indispensable to the proper training of men for the kind of service referred to, makes possible, for the first time, adequate attention, on the part of the school, to a department of its work which is of steadily increasing moment.



A TOPOGRAPHIC SURVEY AT THE BIOLOGICAL STATION