FIELD NOTES

*by Cam Place***Chemical Treatment of Trees to Facilitate Debarking**

During the past two or three years, the technique of girdling and poisoning trees to enable their debarking in other than the sap peeling season has apparently aroused considerable interest in the pulp and paper industry. The Eastern Pulpwood Company, for example, has poisoned about 20,000 cords of hemlock, spruce and fir in western New Brunswick and adjacent Maine; the Howard Smith Corporation has treated about 30,000 cords of pulpwood in Quebec and Ontario.

Last July, I had the opportunity of kibitzing on the summer meeting of the Private Lands Committee of the Canadian Pulp and Paper Association while it was visiting one such chemical debarking operation on the New Brunswick limits of Eastern Pulpwood. This company is poisoning trees because of scarcity of labor during the sap-peeling season and the loss of weight of the wood owing to peeling enables the company to drive hemlock and reduces sinkage of spruce and fir. I was rather impressed with the ingenious spill-proof equipment that the local foresters have devised for handling the poison. Of course objectives may differ in the use of the technique, and the organization of girdling crews and choice of girdling tools must be adapted to the density of the stands and the species and size of trees being treated. According to Bruce Logan, reduction of about 800 pounds per cord in shipping weight of pulpwood is the feature that appeals to the Howard Smith Corporation.

The problem of chemical debarking was tackled in a way that I hope serves as a precedent for the future. Fourteen companies in eastern United States and Canada joined in financing a research team headed by Dr. Hugh Wilcox at the New York State College of Forestry. This group has spent several years investigating the problem, and owing to the varied skills of its members and the freedom of research given them, it has been able to make a much more comprehensive study than an individual company would have undertaken on its own.

The peeling characteristics of about seventeen broad-leaved and coniferous pulpwood species have been studied, and considerable information of theoretical as well as practical value has accrued. The findings are too lengthy for me to mention here, apart from saying that sodium arsenite has proven to be the most effective poison tried so far. Those interested may find the details in recent progress reports in the *Journal of Forestry* (1, 2), and in the *Pulp and Paper Magazine of Canada* (3).

Subsidization of Research in Universities

The question of subsidizing the faculties of Canadian Forest Schools to conduct research merits some discussion. Many staff member of forest schools would probably jump at the opportunity either to conduct independent studies of their own or to direct that of graduate students during the summer. Unfortunately, most of them cannot afford to forego the money they can earn

working for some outside agency. The upshot is often that a professor finds himself working at projects of little interest to himself and the results of his labors are frequently relegated to gather dust in the files of some company or government office.

The complexities of federal-provincial relations apparently render it impossible for the federal government to make direct grants for research at universities. The National Research Council can finance university research to the extent of providing funds for equipment and payment of student assistants, but the poor professor himself is left out in the cold. Industry, however, is under no such handicaps, and might accomplish much either by making available nominal sums for research to be used at the discretion of the university faculty, by subsidizing graduate research projects, or by underwriting research teams for specific tasks such as was done for the study of chemical debarking cited above.

Yale University has recently given details about a rather lavish example of the sort of assistance that might be given. The John A. Hartford Foundation (established by the former president of the Atlantic and Pacific Tea Company) is supporting an extensive program of research and education in forest biology. The research will cover such major areas as tree physiology, the study of tree properties in relation to the environment in which it was produced, forest biometry, forest soils, entomology, forest genetics and tree improvement, and forest meteorology. A 300-acre property at Valhalla, near White Plains, New York, will be the centre of the research activities; adequate greenhouse, laboratory, and office facilities will be made available there. The Yale Forest School in New Haven will be the centre of the educational program. The grants made by the John A. Hartford Foundation will be used to add nine additional scientists to the faculty of the school and provide for five major fellowships for advanced students working for Ph.D. degrees in forest biology.

Section Meetings of the C.I.F.

I have endeavored to find out what the various eastern sections of the C.I.F. are doing this summer, but the gleanings are rather scanty. As of July 1st, the Maritime Section divided into a Nova Scotia Section and a Western Atlantic Section, the latter to include Newfoundland, Prince Edward Island, New Brunswick, and part of New England. The Nova Scotia Section planned to hold a summer meeting, but at the date of this writing details were unsettled. The Western Atlantic Section will meet at C.I.P.'s Causapscal Forest Experiment Station from August 25th to 27th. The regular annual meeting will be in Fredericton in late October, the theme being "Public Relations in Forestry".

The Ottawa Valley and Quebec Sections will hold a joint outdoor meeting at the Harrington Tree Farm on November 10th. A new section proposed for the Pembroke area of the Ottawa Valley will hold its first gathering at the Petawawa Forest Experiment Station on August 20th. The Northwestern Ontario Section made no plans for a summer meeting because of a joint meet-

ing in July of government and industry on fire protection at Jellicoe on the limits of the St. Lawrence Corporation, and because of a field meeting of the Forestry Committee of the Canadian Pulp and Paper Association at Port Arthur. A subsection of the Northwestern Ontario Section has been formed to serve those foresters living in the eastern part of the district; this group gathered at Longlac in late June to view operations of the Longlac Pulp and Paper Company. Incidentally I should like to thank those correspondents who sent me these items.

"Soil: A Basic Resource in Wood Production"

This topic was the theme of the annual meeting of the New England Section of the Society of American Foresters in Boston last March. It is unlikely that the papers delivered there have had wide circulation, and since several of them are rather revealing as to the attitude of foresters toward soil, I intend to devote some space to them in this and the next issue.

Lawrence Goldthwait gave the first paper, *The Glacial Geology of New England*. This dealt briefly with the dynamics of ice movement and erosion, and the methods of deposition of glacial dirt; it then went on to discuss the classification of deposits on the basis of composition, external form, and origin. Foresters acquainted with the work of Angus Hills and George Brown in Canada would find this familiar ground. It emphasizes, however, the dominant influence of glaciation in shaping and sorting the surface deposits of our landscapes, and serves to suggest that physical geology is a "must" course for all undergraduate foresters.

The second paper, *Tree Growth, Action and Interaction of Soil and Other Factors*, by Theodore Kozlowski, is a general discussion of tree growth as governed by the intrinsic hereditary make-up of the tree and its interactions with the soil. Prof. Kozlowski points out that behavior differences between species, e.g. in length of growing season and shape of the growth curve, are controlled mainly by hereditary limitations, and that changes in environmental factors can produce growth variations only within the rather rigid limits imposed by heredity. He also challenges the assertion made for many years that all soil moisture within the range from field capacity to wilting percentage is equally available for trees. Much depends on the measure of growth used as a criterion, and on the energy relations of the moisture-absorption curve of the particular soil in question. In many loams and clays, most of the available water is held with a tension of less than two atmospheres and relatively little in the remainder of the range up to the wilting percentage, at which point moisture is usually held with a tension of about 15 atmospheres. An increasing body of evidence suggests that vegetative growth tends to be proportional to the average moisture stress prevailing throughout the growing season, and that periods of high moisture tension result in reduction of growth which cannot be compensated for by later additions of moisture.

Foresters who have long forgotten most of their plant physiology would find Prof. Kozlowski's paper informative and relatively painless. Those wishing a more comprehensive review of the topic would find it well worth the

effort to consult the monograph, *Soil Physical Conditions and Plant Growth*, edited by Byron T. Shaw (4).

E. G. Kelso's short address, *The Kinds of Soils Information Desired by Foresters in Industry*, is the sort of paper that leaves a research man feeling rather frustrated and futile. Essentially it is a plea to reduce this aspect of forestry to a trade school level with simple gadgets to tell the forester all about the soil. It cannot be done. I can sympathize with Mr. Kelso's impatience with the multiplicity of soil types mapped by soil surveyors who are primarily trained in and interested in agriculture. But the attitude that the soil is far too complicated for the industrial forester to even attempt to cope with it is much too common. The detailed soil series of the agricultural soil surveyor can usually be grouped into aggregates useful to the forester. Moreover, those who have been following the work of Angus Hills and George Brown in Canada know that a method of site classification has been developed which non-specialists can learn to apply with aerial photographs and which promises to give the industrial forester the kind of information he wants. But some ideas cannot be expressed in rules of thumb, and the forester himself must make an effort to learn.

K. A. Barraclough's paper, *The Kinds of Soil Information Desired by Foresters in Extension* dwells mainly on the fact that soil markedly influences the course of forest succession. The extension forester should know whether the long-term trend in succession is towards hardwoods or softwoods if he is to make intelligent recommendations for the management of stands on them.

The fifth paper, *The Kinds of Soils Information Desired by Foresters in Research*, was given by Prof. David Smith of the Yale School of Forestry. Dr. Smith's thesis was that research in forestry accomplishes only a small part of its task if it is confined simply to faithful reporting of effects and ignores the question, "Why?" As one of his illustrations, he points out that we are prone to accept properties such as soil porosity as a purely physical characteristic, whereas it may often be largely owing to the plowing and fertilizing action of small animals and fungi. If this is the case, we at least ought to know what the organisms are and how we can assist their efforts by providing a suitable environment.

The Flow-Former

Although the trend in transport of wood is more and more towards use of trucks, most of eastern Canada's timber is still moved by water, and news of a device to facilitate its handling in water will no doubt be of interest to many foresters. The Finns have developed a machine called a Flow-Former that can cause a flow of water in any pre-determined direction. It may be used to counteract, or partially counteract, the natural currents in a stream, or for creating a flow in still water, or to minimize the effects of crosswinds.

The driving power of the device is provided by an electric motor installed in a water-tight steel box. The propeller driving shaft passes through the wall in bearings of lignum vitae; steel guards protect the blades from damage; and the blades, guards, and directing vanes are designed to cause the water to flow forwards rather than upwards.

Trials in Scandinavia have shown that the apparatus can guide logs in booms to the mill entrance against the natural stream current without constant supervision of a large number of loggers as is usually the case. It has been used to guide floating logs in a channel to a jack ladder, or to the spiked rollers in a dam. It has been found effective in clearing ice from a waterway; in Finnish tests, it cleared a course 160 yards long and 25 yards wide through ice nearly two feet thick in four days; and might thus be used for releasing floats of icebound logs. It could also be adapted for dredging, or for preventing stagnation and guiding filth and debris to a run-off point where wood is stored in water.

Fourth World Forestry Congress

This issue's notes appear to be full of meetings, but I can hardly close without mentioning the Fourth World Forestry Congress that is to be held in Dehra Din in India next December. This town at the foot of the Himalayas is well known as being the site of the Indian Forest Research Station. F.A.O. is sponsoring the Congress and the Government of India has undertaken its organization. The program is arranged under five main headings, namely: (1) the present status of forest protection and forest management in the world; (2) protective functions of the forest; (3) productive functions of the forest; (4) utilization of forest products; and (5) tropical forestry. As might be expected, the problems of underdeveloped forests will receive particular attention, and the possibilities of raising the economic value of such forests by increasing their accessibility, making greater use of neglected species, and introducing new industries and methods will be considered. Tours covering the finest forests areas of India and Pakistan are being arranged.

REFERENCES CITED

1. WILCOX, HUGH, FELIX CZABATOR, and GUIDO GIROLAMI. 1954. Seasonal variations in bark peeling characteristics of some Adirondack pulpwood species. *Jour. Forestry*, 52: 338-342.
2. WILCOX, HUGH. 1954. Some results from chemical treatment of trees to facilitate bark removal. *Jour. Forestry*, 52: 522-525.
3. JAHN, EDWIN C. 1954. Chemical debarking of trees. *Pulp and Paper Mag. of Canada*, 55(8): 154-158.
4. SHAW, BYRON T. et al. 1952. Soil physical conditions and plant growth. First ed., xv + 491 pp. Academic Press Inc., New York.

SOCIETY OF AMERICAN FORESTERS MEETS

The 1954 Annual Meeting of the Society of American Foresters will be held in Milwaukee, Wisconsin on October 25 to 27 at the Schroeder Hotel. Eleven technical division meetings will be held and the conference will close with a dinner in the Schroeder Hotel on Wednesday evening, October 27. An attendance of about 1000 members, ladies and guests is anticipated, and a cordial invitation has been extended to members of the C.I.F. to be in attendance. Full details of the Annual Meeting program have been carried in recent issues of the *Journal of Forestry*.