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A RESEARCH FORESTER LOOKS AT HIS JOB.

By "A. FORESTER"

SOME years ago, a graduate forester of less than twenty-four hours' standing, I boarded a train en route to my first permanent job. Thereafter, I cruised, mapped, surveyed, fought fires, and eventually administered, in various capacities, sections of a sizable forestry organization. My day developed into a programme of eight hours of sleep and sixteen hours of fire organization, pumps, hose, speeder accidents, tires, tubes, stumpage prices, outstanding accounts, and what have you. I wanted to keep in touch with all new developments, but, while I knew what "hour-control" involved, that there was a blister-rust war on, that Toumey had written something good on silviculture, and a few similar high-lights, I found it a losing battle. Hiding my ignorance behind a cloak of silence and an expression (perhaps imagined) of profound and tolerant knowledge, I listened with some awe to veritable youngsters, doctors and masters of this and that, discuss PH., ecological factors, site indicators, and various other mysteries, escaping with a sigh of relief to my familiar fires and timber sales. Perforce I was happy to see a timber sale completed without worrying too much about problems of regeneration, or to see my ground fire extinguished without caring whether it was arctostaphalos or chrysoplemium that had been consumed. In other words, I was probably a fair example of the average forester in Canada who has no time to practice forestry.

Twelve months ago, as the result of a chain of happy, or unhappy, circumstance, I found myself placed overnight in charge of a Forest Research organization, a well-organized and staffed research office of some years' standing, with all the trimmings from library to nurseries and experimental forests; permanent plots by the hundreds; with "F" projects and "I" projects and "ME" projects; member of the International Union of Forest Research Organizations; correspondent of universities and research organizations of Europe and America. For twelve months I have been a dual personality. Number One goes to the research office, to the field, and to conference, trying to pick up the loose threads, and to organize, co-ordinate and understand in his mind the work prosecuted and projected both by my own office and other research centres. The other, Number Two—the "practical" for-

ester of other years—watches this proceeding with a smile compounded of sympathy, amusement, and a little impatience. The one, a hundred-per-cent research officer interested in his work, without a doubt regarding its value, and loyal to his staff and their undertakings; the other, something of a Doubting Thomas, ready to criticize and perhaps getting a clearer picture of the problems as a whole. Number Two has some serious fault to find with forest research in North America. Number Two writes this dissertation and, incidentally, writes it *now* lest he be submerged and browbeaten out of the intention within the next year by a complacent Number One, no longer so badly at sea in his new surroundings.

To vent all my accumulated spleen would prove tiresome. Three major items, however, I believe, are worthy of careful consideration. They are:

The mania for "publishing,"
Duplication of effort,
Lack of accessible information.

HAVE YOU "PUBLISHED?"

Trite, hackneyed, overworked. Unfamiliar a year ago,—maddeningly familiar to-day. Mention a young research worker in a company of research men, and the question that springs to all lips is, "Has he published?" There appears to be no interest in his personality, capabilities, scholastic attainments or the value of his work. Mention a piece of work in progress, and the inevitable question is, "Have you published?" Number One condones and excuses; Number Two comments, "Aw Hell!" Nor is this imagination. For the past six months I have never missed an opportunity to switch conversation in order to make a test, betting with myself on the result. I haven't lost a bet yet. The last two to bite were the Director of an important Forest Experiment Station, and a man who might reasonably be nominated the leading Forester in Canada.

The result of this publishing complex is an overwhelming mass of printed matter embodying ideas and experiments half-baked, soggy, and indigestible. I shoo the kiddies out of the way immediately after supper and attempt for a few precious hours to cruise through some of it in hopes of finding a fair stand of merchantable ideas and information. I find nothing much but scrub, the trails lead nowhere and I get hopelessly bushed for the night. The familiar old titles, "Some comments on..." or "Some aspects of....," confront us at every turn, and in tons of printed matter when information is wanted it can't be found. Perhaps 75 per cent. of our forestry papers are waste—waste of time in preparing them, waste of labour and material in printing, and waste in reading. Ruskin said, "A great part of the sup-

posed scientific knowledge of the day is simply bad English, and vanishes the moment you translate it." I believe the old boy was right.

Some months ago I visited a forest laboratory worker who believed he had exploded a theory of considerable commercial importance. Repeated experiments had proved his case, but he proposed to repeat them for a further long period to be quite sure of his ground before making his findings public. This is the refreshing exception which proves the rule. Early in our talk it was on the tip of my tongue to ask him if he had published. Had I actually fallen, I would still suffer chagrin.

DUPLICATION OF EFFORT.

There are many phases of forestry, such as administrative problems and certain silvicultural aspects which are of purely local interest; others, such as turpentine, are regional; many phases are of continental interest, or nearly so. Research foresters are largely concerned with basic principles capable of wide application. The rate of forest protection tax levied in the Prairie Province is of no interest to New Brunswick. The results of spruce-regeneration experiments on the Prairies are worthy of very careful consideration by workers along the same line in New Brunswick, Oregon or Massachusetts. Yet, under present conditions, these or any other combination of units may work independently, duplicating each other's work for long periods. I recently heard two eminent foresters quote quite different results in connection with identical studies carried out by their respective organizations. These independent units are prosecuting a study of a factor of importance to Western America. Some months ago, after years of guess and makeshift, we decided it was necessary to develop, if possible, a reliable photometer. The available literature was searched out and, while many experiments were unearthed, none of the results we could find would meet our requirements. A few weeks ago, quite by accident, we discovered that an experiment station in the United States had been working on the problem with promise of outstanding success. Nothing but the lack of funds saved us from being already well launched on an expensive series of experiments at the time we discovered them to be unnecessary. I recently told "The Chief" that *nothing* had been done along a certain line and that we should be conducting investigations. From the corner of his desk he took a paper from which he read to me a statement of the results of extensive work which had settled the problem on which "nothing had been done." That he should have been familiar with this particular piece of work and have the report on his desk was a pure coincidence, unfortunate for me,—fortunate for our exchequer. That I was unfamiliar with it was a natural result of present conditions.

Such cases of duplication could doubtless be multiplied a thousand times. None of us can be sure that we are not duplicating work being done elsewhere. There are so many problems awaiting our attention, so little money available, and personnel is so limited, that this problem of keeping in touch with current undertakings merits the best thought of the research fraternity.

LACK OF ACCESSIBLE INFORMATION

In spite of a veritable avalanche of printed matter, it is impossible for a busy staff to keep in touch with all current developments. Even were it physically possible to wade through all that is printed, no research office (fortunately) succeeds in getting copies of all publications. Our mania for publishing doubtless developed in an effort to disseminate useful information, and, lacking any better system, is perhaps necessary in spite of my tantrum. The fact remains, however, that it is not fulfilling its object, and on the subject of current experiments we are more in the dark. Some effort is made in the United States to supply information regarding current projects in published work programmes and station reports, but such are incomplete, of limited distribution, and fail to keep research workers in touch with what is being done elsewhere. There follows, as a result of this lack of information, wasteful duplication of effort, individual doubt and half-satisfaction in our daily task, and new publications of work done, but not co-ordinated with that done elsewhere.

Dean Howe, at the recent Pacific Science Congress, stressed the importance of shaping research programmes to a common end calculated to throw light on our major problems, rather than dissipating our resources on isolated and local problems or relative unimportance. Had he not been primarily concerned in his paper with conditions in Canada, he might well have made the same statement relative to North America.

Trade and commerce, banking, habits, and speech may change complexion in various countries, but natural phenomena are no respecters of international boundaries, and scientific research is missing a big bet if it fails to co-operate by confining its efforts within any arbitrary boundaries, or, worse still, if it permits the personal ego of any research worker or his immediate organization to dictate policy or programmes.

Accepting Dr. Howe's summing up of what should be our primary concern for the immediate future, his proposed programme of co-ordinated research calls for wide co-operation. To accomplish this there must be a complete and up-to-the-minute dissemination of research data. Whether sectional interest and prejudice can be sufficiently satisfied to accomplish

this primary object or not the research organizations are still vitally interested in having complete data immediately available.

This distribution of data would involve:

A reliable bibliography,
Abstracting of current literature,
Advice on research programmes.

The bibliography should be world-wide in scope. The project is engaging the attention of the International Union of Research Organizations and we may look forward to having such a bibliography available at some future date.

The abstracting of current literature is a problem distinct in itself. Biological Abstracts at \$15.00 a year covers perhaps two-bits' worth of the field. The Experiment Station Record, Ecological Abstracts, Botanical Abstracts and others add their tiny contributions. The "Journal of Forestry" gives us some very excellent and much appreciated reviews, but by and large we must depend on our own resources for the impossible task of keeping abreast of current literature.

Research programmes, apart from the few unsatisfactory items previously mentioned, are still closely guarded secrets. Somewhere, in the interests of economy, efficiency, and forestry in general, there should be available to every research worker a statement of current research projects. I do not advocate here a few thousand additional "Comments on" and "Aspects of." Half-finished studies will be of vital interest to very few men. A statement of projects with a very brief progress report (a few lines), is all that need be published. Further details could be secured by interested foresters from the organization concerned. The calls for such information would be confined to men vitally interested and should not be sufficiently numerous to prove burdensome. Incidentally, this work-programme would to a great extent obviate the necessity (or counter the excuse) for much of the present-time premature publication, and would make possible more comprehensive papers and sounder conclusions.

My solution for this set of problems is an "International Forest Research Bureau of Information" for Canada and the United States, supported by subscriptions from forest services, forest schools and forest research stations. One-hundred-per-cent. participation is perhaps too much to expect, but the interested organizations are sufficiently numerous to offer possibilities without excessive cost.

The object would be to publish a quarterly abstract of current forest literature and an annual statement of research work being done. Items

should be classified according to standard library practice and printed on loose leaf or card to permit accumulation by subject and consequent easy reference. Much of the abstracting should be done by volunteers. The work programmes and progress reports would be compiled from periodic reports to be submitted by all the organizations involved.

The staff of the Bureau might consist of a director, two or three assistants, and clerical staff. The sale of publications would defray a part of the cost, and the remainder would be raised by membership fees of not more than \$250 per year, collected from participating organizations. Many times this membership fee should accrue in savings effected by eliminating duplication of work.

The Bureau should operate under the guidance of some permanent responsible organization, such as one of the leading forest schools, the Society of American Foresters, the Research Council of Canada, the Division of Forest Research at Washington, or, even though not within the present scope of its functions, the recently appointed Associate Committee on Forestry of the Research Council.

The plan is entirely feasible and highly desirable. Its success would depend largely on the choice of director, wide participation, and the burying of petty jealousy. I look forward eagerly to the day when some such service will relieve me of much of the drudgery, largely fruitless, of trying to keep abreast of current developments, and our organization of uncertainty and waste in its programme of investigation.

So much of spleen; and a dream, which I hope some one of more influence than myself will be moved to urge to fruition. I have added my little quota to the avalanche of printed pages. I have done more. I have inducted myself into full brotherhood in the Research Fraternity. I have "published"!