DR. ILVESSALO AND FOREST TYPES.

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Dr. Yrjo Ilvessalo, Professor of Silviculture, Forest Research Institute of Suomi (Finland) directed the survey of forest lands of Suomi 1921-1924, the results of which are embodied in a 600 page report, in Finnish and in English, entitled "The Forest of Suomi" 1927. He has prepared yield tables for pine, spruce and birch; a description of the procedure is given in his bulletin "Method for Preparing Yield Tables," 1927. In each of these projects Dr. Ilvessalo classified his forest types on the basis of surface vegetation, Cajander's type-classification. Hence Dr. Ilvessalo is thoroughly conversant with the characteristics and methods of preparation of Cajander's type-classification.

Notwithstanding the much larger number of species existent in Canada and United States confidence in the possibilities of such a classification for this continent is rapidly growing. Such authorities as Barrinton Moore, and S.T. Dana see in it a solution to our problem of site classification. The Dominion Forest Service has also been giving this question some consideration. Dr. Ilvessalo is now making a tour of Canada and United States, on behalf of the Government of Suomi to study silviculture conditions here. We deem it fortunate that he spent several days at the Petawawa Forest Experiment Station examining and discussing the flora and its relation to the stands there.

Although a detailed classification of the flora on the various permanent sample plots at Petawawa was made some time ago expressly to study the relation between vegetation and site, the need of a definite plan of procedure has been felt, in which direction Dr. Ilvessalo's suggestions have done much to assist.

Since every change in a stand is liable to have an effect in some degree on the flora, the logical place to commence the investigation is in the mature pure stand. In such stand, for each species, attempt should be made to discover one or more species of flora characteristic of the soil bearing such stand, and which is less common or does not occur at all on soils bearing other mature pure species, indications of the climax type.

From this point progress may be made, step by step, through younger, pure stands. Mixed stands will follow, and in these no doubt many difficulties and complications will be encountered.

This is a biological investigation, and not an exact science. One cannot say any given species never occurs on a certain

type even although in general terms it does not occur there. Nevertheless recourse must be had to mathematics in recording occurrences in this general way. Dr. Ilvessalo recommends the use of the "Novilin" method. A table of ten divisions based on spacings of plants as follows;-

Division 1	Spacing	10 m	33 -- feet
2	5	10 m	16 - 33 feet
3	2	5 m	7 - 16 "
4	1	2 m	3.3 - 7 "
5	$\frac{1}{2}$	1 m	1.6 - 3.3 "
6	15	50 cm	6 @ 20 inches
7	$2\frac{1}{2}$	15 cm	1 - 6 "
8	6	$7\frac{1}{2}$ cm	2.3 - 3 "
9	4	6 cm	1.5 - 2.3 "
10	1	4 cm	0.4 - 1.5 "

A classification of the flora, of course, demands a working knowledge of the principal flora, including a few of the ferns and mosses. Although mosses do not occur in the six primary type names adopted in Suomi they do play an important part in determining the final type species. In his book of growth and yield tables, Finnish only, the above table of distribution is found as well as a list of flora and frequency of their occurrence on the types.

Their six standard types are -

- O.T. Oxalis (Wood sorrel)
- F.T. Fern
- M.T. Myrtillus (*Vaccinium myrtilloides*) (Bilberry)
- V.T. *Vaccinium* (Blueberry)
- C.T. Calluna (Heather)
- Cl.T. Cladina (Twig rush)

These are used individually and in various combinations.

From his brief investigation at Petawawa Dr. Ilvessalo recognized a similarity to Finnish conditions in our types. On good low-lying soils, which retained much water, but were not actually bogs, oxalis and ferns appeared to be thriving characteristic species. On this site spruce, fir, and occasional ash and cedar were growing. He considered it to be O.T. plus F.T.

Having observed an abundance of oxalis and ferns he proceeded to make a tally of other species and their distribution on an area of about one square chain. Finding other species that associate with oxalis and ferns on soils of O.T. and F.T. quality he concluded his deduction was perhaps justified.

On soils bearing oxalis and myrtillus, O.M.T., red and white pine seemed to thrive.

Vaccinium type (blueberry) V.T., seemed to be a good jack pine type.

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Although there is not a type bearing the name *Maianthemum*, (false lily of the valley) occurrence of this species was pronounced on the hardwood soil. Hardwoods may be Oxalis type, O.T.

Dr. Ilvessalo was not familiar with *Myrica asplenifolia* (sweet fern) which is clearly an indicator of poor soils to which jack pine is perhaps the best adapted, but the quality of pine is inferior to that grown on *vaccinium* type soil.

Bracken abounds prolifically everywhere and consequently cannot be considered as an indicator.

In general the Petawawa types seemed to be M.T., and V.T. in various combinations, indicating a suitability for pine, which is undoubtedly the case.

It seems hardly to be expected that conditions in Canada will permit of a classification limited to six primary types. However, if a classification is not to be unwieldy it should be confined to perhaps ten or twelve primary types and various combinations of these.