

TEACHING OF FORESTRY IN SUOMI. GENERAL FEATURES

by

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The higher teaching of forestry in Suomi was transferred in 1908 from the Evo Forest Institute, established in the country in 1859, to the University of Helsinki (Helsingfors), where it has remained ever since. As the main idea in organizing this teaching may cause an exchange of opinions, the guiding principles are explained below.

The principal idea in the organization of the teaching was that the *University should bring up practical forest officials with a scientific education* and, secondly, that the *more talented ones should, by continuing their scientific studies, have an opportunity to increase their knowledge and widen their range of vision.*

With regard to the former object, the main idea was, though the teaching for the examination of forestry had been removed to the University, and though it had to be up to the standard in a scientific respect, that the practical work of the students should not be neglected. On the other hand, and with regard to the scientific teaching, it was considered important that though the students would receive a sufficient training in fundamental and supplementary sciences, the studies, however, in the end should be concentrated on the proper professional subjects.

Accordingly, the final forester examination to be passed at the University comprises, as the four chief subjects, merely professional ones, viz., silviculture, forest management, forest utilization, and forest policy; the examinations in fundamental and supplementary sciences having to be passed already earlier. The studies of a University student of forestry thus begin with mere fundamental sciences: botany, chemistry, geology, physics and mathematics (for zoology the school course is considered to be sufficient), all of which by strenuous studies can be passed in one year; this study has been organized in a somewhat school-like manner. The training courses are terminated with examinations in every subject. The studies during the subsequent years are arranged after the manner of the free university-

studies prevailing in the Northern countries, and already for the second college year a recommendation is made to attend partly lectures on professional subjects and particularly such special or minor subjects as geodesy, law, plant pathology, forest zoology, as well as lectures on such fundamental sciences as science of soils, plant geography and plant biology, and if possible, general economics. Special examinations are held in these sciences before the final examination (plant geography and plant biology, for the present included in the final examination in silviculture, are excepted, as well as general economics, for the present included in the final examination in forest policy). The subsequent years are chiefly devoted to the proper professional sciences. When leaving the University the student is thus trained for the profession of his future field of action.

It is a well-known fact that in the Northern countries there exists a pretty long, continuous summer vacation, extending officially from the beginning of June to the end of August, though in practice it may be a little longer. In order that this time should not be lost to study, but at the same time serve as a period of such recreation as is offered by a change of work, practical training is arranged as a part of the summer vacations. This extends over two summers. The field work of the first summer is done in the summer following immediately after the first year's study of fundamental sciences, and it is required that the respective person should have passed an examination at least in the four fundamental sciences and in addition to that also a minor examination in the fundamental principles of silviculture and forest utilization. The work of this first summer is chiefly concerned with silviculture and forest utilization, including floating (often by contract), forest sowing and planting, nursery work, road-making, swamp ditching, forest cutting and chopping, stamping, etc. The work is performed on the University range, subordinated to the State Forest Section of the Board of Forestry, this area comprising 17,000 hectares. The field practice of the second summer includes mapping of lands, forest surveying together with the drafting of a working plan for a mapped and surveyed area. On behalf of the Board of Forestry this work is performed on different State lands, concerning which the professor of forest management each time has to agree with the chief of the working plan division of the Board of Forestry. This work is mostly performed on such State lands as require remapping or completion. Hence it follows that the work is mostly performed in

comparatively remote forest districts, and whilst the students during the first summer are accommodated in quite comfortable State buildings and with good common boarding, they may during the second summer have to live in some tiny cottage in the forest, or in temporary forest camps, sometimes even spending the night in the open air in the forest and having to take care of their meals as best they can, thus becoming familiar with real forest life.

The studies for the forester examination take about 3—4 years.

The Forest Administration Ordinance of June 3rd, 1921, provides that a student who has passed his final examination at the University, and who must possess a sound constitution, good sight and hearing, shall further undergo a year's practical training at some range selected for the purpose at a joint Section session of the Board of Forestry. This range must be of a variable quality and satisfactory with regard to its sale of products, and in charge of a forester who is willing and capable (for special payment by the State) to coach forest apprentices. The training terminates with the passing of a service examination at the Board of Forestry, comprising special examinations in (1) practical forestry, (2) forest policy, and (3) forest administration, as well as in knowledge of forestry laws and ordinances. This examination is required for obtaining the degree of an extraordinary forester. (For certain reasons, among other things on account of the new organization of ranges, caused by joining the numerous State farm forests into ordinary ranges, the practical training provided for by the Ordinance of 1921 has not yet been enforced, but it will probably be enforced in the next few years. Up to now the degree of an extraordinary forester has therefore been given without the stipulation about a practical training year being enforced).

It is considered that a system of this kind will guarantee a sufficient, theoretical as well as practical education for the officials, subordinated to the Board of Forestry and in general for forestry men in practical service. However, actual familiarity with the profession is, of course, only gained after many years' experience. Extraordinary foresters are therefore at first mainly set to assist in the operations, and then, by and by, more responsible tasks are given them as they seem to gain sufficient qualifications for the work.

But besides studies of this kind, it is also absolutely necessary to offer an opportunity of the higher study of forestry. It is not only

indispensable to those who prepare themselves with a view to becoming teachers at the University and for forest research, but it is also very useful to all those who prepare themselves for more exacting and responsible positions in the field of forest administration in general. It is true enough that a high examination in itself does not make a man fit for a responsible position — in the Finnish Forest Administration Ordinance of 1921 no other competence is required for an appointment in forest administration than the degree of an extraordinary forester, whereas the essential condition is the same for all appointments to any office or employment, namely, that the person concerned, by his earlier activity, has proved himself to possess such ability as a successful management of his office demands — but it is quite evident that a person who is otherwise well qualified, and who above all has got the necessary practical knowledge also in the practical execution of his work has got better chances to show his ability in a successful discharge of his official duties, particularly if he, in addition to all this, by continued scientific studies has increased his knowledge and widened his range of vision. Experience has also amply testified to the correctness of this view. Even though the same results may be attained by studies on one's own account, the task is, of course, made so much easier when continuation courses in science have been specially arranged. To that end studies for the Candidate (Master) and Licentiate (Doctor) examinations have been arranged at the University.

For the Candidate examination one has to pass in four closely related sciences, forming a natural unit. Besides actual professional sciences, and such science as the science of soils (agricultural chemistry and physics), plant pathology, and forest and agricultural zoology, also all such sciences from the other faculties of the University are admitted, when these sciences in one way or another are regarded as fundamental sciences, as, for instance, botany, chemistry, physics, mathematics, economics, finance, and others. The requirements with regard to the various subjects are much greater for this examination than for the forester examination. The highest marks (laudatur) must be obtained in at least one subject, for the receipt of which among other things, an original scientific treatise is required, although it need not be printed, nor publicly defended.

The Candidate examination which, indeed, does not necessarily imply a previous passing of the forester examination, serves as a preparatory examination to those who wish to pass the Licentiate

examination, though it signifies at the same time a termination of studies to those who — for intellectual or pecuniary reasons — have not got the opportunity to pass the highest or the Licentiate examination. The latter comprises three closely related subjects which may be selected just as freely as for the Candidate examination, but the main subject must belong to the sciences of forestry. The lowest marks of the Licentiate examination correspond roughly to the highest marks or at least to those between the highest and the medium marks of the Candidate examination. The highest marks are not necessarily required in any of the three respective subjects for the Licentiate examination; instead, in the main subject a printed thesis is required, which has to be defended in a public dissertation (of not more than six hours' duration).

The teaching of forestry was at first (in 1908) established in the agricultural branch of the philosophical faculty of the University, which branch had been founded two years earlier by the ordinance of 1906, and by which the highest agricultural teaching was transferred to the University from the corresponding Agricultural Institute at Mustiala. In 1924 the branch referred to was transformed into a separate faculty for agriculture and forestry.

When the teaching of the science of forestry was assigned to various professorships, good care was taken that the subjects taught by each professor should form, as far as possible, a coherent unity of subjects, but that certain subjects, at the same time should be advantageously combined with the corresponding subjects of the lecturer on agriculture, however, in such a way that separate courses should be given to students of forestry, and separate courses to the students of agriculture. For the science of forestry, professorships thus exist in (1) silviculture (for the present, this professorship also comprises forest protection, and forest botany), (2) forest management (comprising also forest mathematics, forest valuation and statics, as well as forest organization), and (3) forest policy (comprising also forest administration and principles of general economics). In forest utilization there is only the service of the University forester, as it would have been difficult to get all the posts filled by competent professors. However, as this obstacle no longer exists, it may be possible to get this post, too, transformed into a professorship. Extraordinary professorships, in common with the teaching of agriculture, exist in plant pathology,

and in forest and agricultural zoology, whereas the professor of agricultural chemistry and physics also lectures on the science of soils. Extraordinary teachers lecture on geodesy and law, the former being at present a professor of surveying at the Technical University, and the latter being a member of the Law Committee. The teaching in fundamental sciences is also in charge of extraordinary teachers, mostly docents (lecturers) belonging to the branch of mathematics and natural history, with the exception of botany and chemistry for the teaching of which there exist, in common with the teaching of agriculture, special assistant professors. An attempt is being made to satisfy the demand for teaching in special branches of the science of forestry by lectures delivered by the docents.

The University forester (teacher of forest utilization) is at the same time a kind of district manager, or chief forest supervisor, for the forest training range of the University, in which latter capacity he is subordinated to the State Forest Section of the Board of Forestry. Under him is the range forester on the training area, also subordinated to the State forest administration, and the training range is thus actually quite an ordinary State range, where, besides the regular work of forestry, the students of forestry also carry out their practical training work; this too, is as far as possible, adapted and belongs to the regular management. When the necessary professorship is established in forest utilization, this professor ought to be relieved of the actual administration of the range, and the University forester be retained as a kind of chief forester for the University training range. During the summers the latter would then guide the students' practical training on the training area, and during the winters he would teach the students of forestry as well as the agricultural students forest encyclopedia. The professor in forest management, assisted by the extraordinary teacher of forest management (an assistant professorship has been suggested), guides the practical management work.

The actual experimental and research activity is set quite apart from the highest teaching of forestry, as it would be impossible for the same person to carry out successfully the teaching in his own branch as well as the research work of the same branch and to such an extent as is necessary in Suomi. For the carrying out of research and experimental work, besides the teaching activity, to the extent which is possible and necessary, the University professors of forestry have got their own University institutes (at present

all united in one combined institute for the science of forestry) as well as the forest training range of the University. The reciprocity between teaching and research is further kept alive by the fact that the professors and their assistants of the Forest Research Institute may be appointed docents at the University, and this, undoubtedly, has a beneficial influence on their own research work. On the other hand professors of forestry and other teachers at the University have the opportunity of being appointed as extraordinary research-workers to the Research Institute for some special research work, and by agreement with the director of the Research Institute likewise work at the Research Institute. The Board of Forestry for its part, of course, has also nothing against it, if University teachers of forestry carry out their investigations in other State forests besides the training area of the University. The most advanced students, particularly those who are studying for their Candidate and Licentiate examinations, and of whom many besides are in the service of the Forest Administration, may if necessary with due permission (for instance, with regard to the cutting of trees), carry out their investigations in the State forests or, by agreement with the director of the Research Institute, in the institute and on the experimental areas belonging to the Research Institute. For individual forestry investigations, as is well known, the Society of Forestry in Suomi (*Suomen Metsätieteellinen Seura*) was founded and has gathered round itself research workers on forestry and related sciences as well as people who are interested in forest science, acting as a connecting link between them all, and offering the opportunity to publish the results of their investigations in the publication series, »Acta forestalia fennica». As far as circumstances allow, the Society also awards scholarships for research work, thus aiding young scientists. Though the Forest Research Institute in Suomi is detached from the teaching of forestry, the forestry teachers of the University, in so far as they are free from their teaching and time allows them, as well as the students at the University, have, however, the best opportunities to carry out scientific investigations.

Owing among other things to the fact that the administration of Suomi's only State University is rather difficult, as so many branches of study have been united, the idea has been put forward to start a separate Agricultural University. This would comprise teaching in agriculture, forestry, surveying and veterinary science, each as

a separate faculty, besides which a special general branch would exist for the teaching of the fundamental sciences for all the faculties. The general organization would mainly be similar to that of the present Helsinki University and the new Agricultural University would be established in Helsinki or in its immediate neighbourhood. With regard to the teaching of forestry, the proposal would not lead to any other change than that the professorship for utilization of forests and the extraordinary officer for the teaching of forest management would become permanent. The Government presented a proposal of this kind to the Diet in 1924, where the matter is under discussion.

Quite apart from the higher teaching of forestry, is the elementary forestry education, given at 5 Forest Schools in different parts of the country. The teaching in these schools is of a practical as well as of a theoretical nature. The theoretical teaching comprises per annum and pupil about 500—575 hours, and the practical one about 1300—1700 hours. The former includes professional subjects (silviculture, forest management, etc.) as well as general subjects (native tongue, arithmetic, etc.). The training course lasts for two years. For practical field work each school has got its own training range, and the work is carried out with a view to being of the utmost use to the management of the training range. The work is similar to that which the University students carry out during their first summer's training, though in slightly different proportions, and the work comprises also mapping and forest mensuration. Those who have passed the forest school prepare themselves to become rangers in the State forests, for entering into the service of private companies, communities, parishes, big estates, and joint farms, or to become provincial forest rangers, forest agents of agricultural societies, and partly also land-owners.

For ordinary farmers there exist shorter training courses, lasting only a few months. These courses are arranged partly in connection with forest schools, partly also in connection with the lower agricultural schools.

Suomenkielinen selostus.

Metsäopetus Suomessa. Yleiset suuntaviivat.

Korkeampi metsäopetus järjestettiin 1859 Evon metsäopistoon. Etupäässä opiston syrjäinen asema pakotti siirtämään opetuksen 1908 Helsingin yliopistoon.

Yliopistoon opetusta järjestettäessä oli pääajatuksena, että yliopiston oli kasvatettava tieteellisen koulutuksen saaneita käytännöllisiä metsänhoitajia sekä että lahjakkaammilla piti olla mahdollisuus jatkuvilla tieteellisillä opinnoilla syventää tietomääräänsä ja laajentaa näköpiiriään.

Edellistä tarkoituksiperää silmälläpitäen suoritetaan yliopistossa n. s. metsänhoitotutkinto. Siihen kuuluu käytännöllisiä harjoitustöitä 4 kesäkuukautena pääasiassa metsänhoidossa ja 4 kesäkuukautena metsänarvioimisessa sekä tietopuolisia opintoja vähintään yhden talvikauden aikana perustieteissä (kemiassa, kasvitieteessä y. m.) sekä 2—3 talvikautena ammattitieteissä. Tutkinto suoritetaan metsänhoidossa, metsänarvioimisessa, metsätekniologiassa ja metsäpolitiikassa. — Metsähallinnosta annetussa asetuksessa edellytettyä yhden vuoden jälkiharjoittelua ei erinäisistä syistä ole vielä voitu toteuttaa.

Jatko-opintoja varten on olemassa kandidaattitutkinto ja lisensiaattitutkinto.

Käytännöllisiä metsätaloudellisia harjoitustöitä varten on yliopistolla käytettävänä metsähallituksen valtionmetsäin jaoston alainen n. 17,000 ha suuruinen Korkeakosken harjoitusalue.

Metsätieteellisestä koelaitoksesta on metsäopetus hallinnollisesti erillään, mutta yliopiston metsätieteen opettaja voi tulla kutsutuksi erikoistutkijaksi koelaitokseen ja koelaitoksen professori tai assistentti voidaan luonnollisesti nimittää dosentiksi yliopistoon, ja muutenkin on yhteistyö, tosin vapaaehtoisuuden pohjalla, molempien välillä varsin kiinteä, m. m. Metsätieteellisen Seuran piirissä.

Alempaa metsäopetusta varten on tietopuoliskäytännöllisiä metsäkouluja, joissa oppiaika on 2 vuotta, sekä vapaita kursseja; sitäpaitsi on olemassa valtioapua nauttiva sahateollisuuskoulu.