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An Outline of Professional and Non-Professional Forestry Training in Norway, Sweden, Switzerland, West Germany and France

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Abstract

Forestry training programs, particularly non-professional, are described on the basis of first-hand knowledge. Countries covered in this summary are Norway, Sweden, Switzerland, West Germany and France. (1)

Non-professional forest training policy, especially in Norway, Sweden and West Germany, commonly included a systematic mix of practical training or apprenticeship and preparatory courses at various stages in the preliminaries leading to entrance to a general diploma technical course. During most diploma courses systematic supervised practice forms an important part of the courses. After graduation, opportunities are provided to the non-professional graduates for further post-graduate specialized or refresher courses at times and places as selected, especially in Norway, Sweden and West Germany.

It was also observed that non-professional forestry training was carried out at special schools, many of which were residential. Most of these schools had the use of adjoining or nearby forest lands which provided a place for practical field instruction which formed an important part of the curriculum.

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Usually, the course of study for forest technicians was one-quarter theory and three-quarters practical.

Professional forestry training placed emphasis on basic scientific knowledge, rather than on techniques, and field work during the course of study was often on a weekly basis, in some instances. The training is generalized rather than specialized and the interrelations between disciplines is stressed. However, for the graduate forester there were few extension courses available.

(1) For an earlier paper on the subject please refer to the FAO, Forest and Forest Products Series #10, 1953.

1. INTRODUCTION

The author made study trips in late 1965 and in 1966 to certain European countries for the purpose of ascertaining the status of forestry training, especially for forest technicians, and other non-professional personnel. In 1967 and 1968, correspondence up-dated the information collected.

Tour arrangements were through the good offices of various Consuls, and also with the co-operation of certain foresters, and, in particular, the following:-

Mr. Joakim Hermelin — Jönköping, Sweden; Mr. Leif Landmark — Oslo, Norway; Mr. Carl Lanz — Berne, Switzerland; Mr. Hansjorg Dinkelaker — Stuttgart, F. R. Germany; M. Servat — Paris, France.

The notes which follow are arranged by countries visited and the findings are summarized from the viewpoint of interest and value to Canadian foresters.

2. FORESTRY TRAINING IN NORWAY

2.1. Norwegian Agricultural College

The Forestry Department of the Norwegian Agricultural College at Ås was established in 1898. At the present time most of the applicants for the degree course in forestry have a matriculation degree (artium). Furthermore, they are expected to have practiced all-around forestry for at least two years, and to have completed a vocational forestry course.

2.2 Forest Ranger Schools

Since 1875 the government has operated a number of Ranger Schools (Statens Skogskoles). At present there are three such schools. There is also one County Ranger School. A general diploma course is conducted over 18 months and an average class numbers 24 students.

The purpose of the Ranger Schools is to train forest technicians for employment either with government or with industry or in private forestry. A secondary aim is to act as preparatory schools for the Forestry Department of the Agricultural College.

Sawmilling laboratory class, Norwegian Sawmill Technician School.

2.3. Norwegian Sawmill Technician School

The main course is the sawmill and planing mill technician diploma course. Special courses also on the calendar are as follows: — Course for Expeditors and Foreman — Lumber Sales; Course in Dry Kilning; Course in Saw Maintenance; Course for Sawyers; Course for Planing Mill Operators; Course in Re-Sawing; Course in Scaling and Grading.

The main course is a one year diploma course to produce qualified sawmill and planing mill technicians. A class consists of 15 to 25 students. Admission requirements include minimum age of 20 years; Lower School — 7 years plus Real School — 3 years; practical experience, i.e. — 2 years in a

sawmill or lumber industry or 1 year in forestry work and 1 year in a sawmill.

The special courses are two to three weeks in length.

2.4. School for Practical Forestry

This state-operated school acts as a preparatory training centre for students proceeding to higher education in forestry, e.g. Ranger School or University.

In this school practical training in the forest is the major objective and 75% of the 10 month's course is spent in the forest.

Yrkesskoler for Skogbruk, Saggrenda. (Forest Worker's School) This is a new Norwegian School costing \$500,000.00. Under one roof is included a dormitory, dining hall, gymnasium, common room, library, classrooms and teaching workshops.

2.5. Discussion

In Norway, there are three distinct levels of employment in forestry and each level has distinct lines of education. Career distinctions between the vocational, technical and professional levels are usually clearly maintained in the civil service and, to a lesser degree, in private industry.

With such a program the basic problem is the co-ordination of the three training levels. The Norwegian solution is to require students planning on higher education in forestry to first complete a training program at one of the forest vocational or practical schools. The winning argument for the continuation of this policy is that the plan produces a better class of student for higher education in forestry, either professional or technical.

Chart I indicates the scheme of forest administration and education in Norway. Chart II is a flow chart of the forestry training scheme in Norway. Chart 1 & 2

3. FORESTRY TRAINING IN SWEDEN

3.1. Royal College of Forestry

The Royal College of Forestry is the oldest of the specialized Colleges in Sweden. It was founded in 1827. In 1962 the College and the Swedish Forest Research Institute were merged into one organization — the Royal College of Forestry.

The forestry degree course is 4½ years in length. This program is carried out on two campuses, i.e. the first year's program is at the Garpenberg Field Camp, and the remaining three years are at the Stockholm campus with some training also at three forest training camps in north, central and south Sweden. The yearly average admission is 36 students whose average age is 22½ years.

Statens Skogsmästar Skola, Skinnkatteberg, Sweden.

3.2. Forest Master School (Skinnkatteberg)

This is the only School of its kind in Scandinavia. It is operated under the National Board of Private Forestry. The purpose of this School is to provide advanced training to forest technicians, forest industry administrators, owners and managers of forests and also to produce advanced forest technicians, who, after receiving teaching training, may be recruited as instructors and directors of forest ranger or forest vocational schools.

75% of a class admitted to this school are the top graduates of Swedish Ranger Schools and the remaining 25% are graduates of the Swedish Secondary School system called "gymnasium". (1). These latter students must attend a preparatory forestry course of 4½ months after they have had an average of 1½ years practical experience.

The diploma course is given over a 15 month's period and there are about 30 students in a course.

3.3. Forest Ranger Schools

There are five Ranger Schools operating in Sweden in 1967. Of these, four are State-operated through the National Board of Private Forestry and one is operated privately. (2) 100+10 men graduated from the six schools on October 13, 1967, and the same is expected on October 18, 1968. However, the program will probably be reduced to 80+10 men in 1968 due to a decrease in job opportunities. (1)

The admission requirements to the State Schools of Forestry (Ranger Schools) cover a number of possible combinations of academic qualifications, experience, and preparatory forestry courses. 82% of the applicants take the 4½ month preparatory course. They are then usually required to gain about 20 months approved forest work experience. The applicant is then tested on his elementary forest knowledge, for learning capacity, and in some cases is also given a psychological test. The actual selection for entrance into a Ranger School is done by a Selection Council.

- (1) Humanistically-oriented branch as compared to a science-oriented branch of the Swedish High School system.
- (2) Gammelkroppa Private School (10 graduates per year).

3.4. Forest Vocational Schools

Forest vocational training is supervised by the National Board of Private Forestry. The actual training is carried out by the 24 County Boards of Private Forestry. The exceptions are one vocational school for special courses operated by Forest Industry and three vocational schools operated by the National Board of Crown Lands and Forests (these are for workers in State Forests).

At the forest vocational schools, basic training for youths is carried out by means of a course extending over 2 years. This course is mainly practical, but some theory is included. The first year (Basic Forest Course 1) is the same for all the different forest occupations. The second year is specialized.

Advanced training for adults is carried out by short courses, usually from 3 to 12 days. These courses may be at the school or, if possible, at a place central to the residences of the participants.

The present capacity in basic training at the forest vocational schools is 1000 students per year and this can be increased fairly easily as required.

- (1) Private communication from Mr. Joakim Hermelin.

3.5. Organization of Forestry Administration and Training

Charts III to V next indicate the general organization of administration and training in Sweden.

CHART III
GENERAL ORGANIZATION ON FORESTRY TRAINING IN SWEDEN

CHART V

FLOW CHART OF SWEDISH FORESTRY TRAINING

CHART IV
SUMMARY OF FORESTRY EDUCATION IN SWEDEN

Type of School	Vocational Training Schools	Ranger Schools	State Forestry School	Royal College of Forestry
Training to	Foreman Forest Owners Forest Workers	Foresters (Rangers or Technicians)	Forest Masters	Forest Officers (Foresters)
Duration of Courses	1-2 Years (Basic Training) 1-30 Days (Training For Adults)	4 1/2 Months + 1 Year	16 Months	4 Years
Normal Pre-Education	Elementary School (9 Years) Used To Be 7 Years But By 1972 All 9 Years	"Grammar" Will Disappear When Elementary Goes To 9 Years	Forest School or Matriculation Examination 3 Years Upper School or Technical School With 13 Years	Matriculation Examination
Present Number of Schools	ca 40 (Approx)	3 Plus 1 Private	1	1
Present Number of Students	1000 (Basic Training) 18000 (Training For Adults)	110 (1967) Expected To Drop To 80 In 1968	30	36

20 - Ranger Graduates With Highest Marks
10 - Matriculation Examination Graduates

4. FORESTRY AND TRAINING IN SWITZERLAND

4.1 Forestry Employment

CHART VI

FORESTRY IN SWITZERLAND

Central Government	—	60 Forest Officers
Cantonal Governments	—	190 Forest Officers
Districts - 4,000	—	6,000 - Hectares

Note - Central Government - Swiss Forestry School Has 20 Foresters On Staff Plus Casual Assistants

- Swiss Forest Research Institute Has 22 Foresters On Staff Plus Technicians And Supporting Staff

4.2 Forestry Training

CHART VII

FORESTRY TRAINING IN SWITZERLAND

4.3. Forestry School Faculty at the Swiss Federal Institute of Technology

The only forestry school which can certify professional forestry staff is the ETH in Zurich (the "Eidgenössische Technische Hochschule"). This School was established in 1855 by the Federal government.

4.4. Forest Ranger Schools

Up to 1965 there were no forest ranger schools. However, the need is recognized and the first forest ranger school commenced operations in 1966. This school is located at Landquart in the Alps Mountain region. A second ranger school is proposed to be located at Lyss in the Jura Mountain region.

4.5. Woodworker Training

The Swiss name for a trained woodworker is "Forstwart" or "Forestier-bûcheron".

The woodworker (der forstwart) is employed on a permanent basis in logging and forest improvement projects of various kinds. In the winter he is occupied mainly on logging projects. During the rest of the year he works on tending projects; nursery work; sowing and planting projects in the forest; assisting in road planning projects; on construction and maintenance of roads and telephone lines; on the construction and maintenance of barriers against torrents and avalanches. He must be able to operate power equipment and various machines.

The preference is to recruit young men who are in good health, able to think and react quickly, and who are not afraid of physical discomfort. Because

the Swiss woodworkers often work in pairs or small gangs with only intermittent supervision. They must be trustworthy and conscientious and able to work with a minimum of supervision.

The academic qualifications required are 8-9 years of school. The minimum age is 15 years.

Because of the competition for suitable young men, considerable use is made of guidance material such as films, pamphlets, personal contact, etc.

The young man leaves school and commences a three year (or two in some cantons) apprenticeship (cantonal law) under the direction of a forester (fôrster) (1) in accordance with Article 3 — Reglement dated February 15, 1966. Under the guidance of the experienced master he learns by doing the various jobs assigned to him. In many cantons the apprentice is switched to another area after one or two years so that he gains experience in different forest conditions.

During this apprenticeship period he is required to attend about one day per week, a course of study given at cantonal Commercial or Trade School. Also, the apprentice is required to attend special courses of about 3 week's duration. These courses are on the use of hand tools and basic training in felling and skidding. During the second or third year he attends a special course on the operation and maintenance of chain saws.

The apprentice is paid a salary which is comparable to that paid to apprentices in other trades.

Upon completion of his apprenticeship final examinations are written. If completed satisfactorily a diploma is granted by the canton. This means that the apprentice forestier-bûcheron is recognized as a professional worker and his status is equivalent to professional workers in industry.

The woodworker who has proven ability in handling men has the opportunity to attend developmental courses and obtain a Federal certificate as a foreman.

A woodworker who has obtained his diploma and who has proven his administrative ability on-the-job and his proficiency in handling men and operating machines may be selected to attend a ranger school. If successful he becomes a forest technician (forestier). The forest technician directs and organizes all the practical work in the forest.

(1) A forestier or fôrster in the Swiss meaning is about the same as a forest technician in Ontario.

4.6. Swiss School of Wood-Working (Sweizerische Holzfachschule)

This School is located in Biel beside the Jura Mountains. The school's program includes the following main courses:—

1. Course for sawyers

A one year diploma course with 8 to 12 students in the machine courses, and up to 16 in the sawmilling.

2. Course for carpenters

3. Course for cabinet-makers.

5. FORESTRY TRAINING PROGRAMS IN WEST GERMANY

5.1. Forestry Administration

The State Governments (there are 10 States) have the responsibility of administering all forestry matters. The forest administration in the States is part of the State Ministries of Agriculture with one exception — Saarland. The administration of forestry in a State is usually as per the following example:—

These four regions have a total of 238 Forestry Divisions (Forstamts) each of an average size of about 4,000 hectares. Each forestry division has 6-7 Ranger Districts (Revierforster) of an average size of about 650 hectares. Another kind of district of about 450 hectares is supervised by a Forstwart.

The head of a forestry Division (Forstamt) is a University-trained forestry graduate called a Forstmeister.

5.2. Forestry Training

Since authority in forestry matters rests with the States, they are responsible for the recruiting and development of forest personnel. The training programs for the personnel employed by the Federal or State governments, private owners and agricultural offices are usually similar, and the same facilities are used. Of the three main categories of personnel, i.e. higher, advanced and middle, the personnel in the higher class are usually employed in forest administration and in research, and as teaching staff at forestry colleges and similar institutions. Personnel in the advanced and middle classifications are mainly engaged in practical forestry operations.

Assistant Instructor showing planting hoes being used by Forest Technician students on tree planting exercise near the Black Forest, West Germany.

The flow chart shown next summarizes the training of the main categories of forestry personnel in the State of Baden-Wurttemberg. With a few exceptions the same chart could apply to any of the other States with only slight modification.

6. FORESTRY TRAINING IN FRANCE

6.1. Administration

A major reorganization of agriculture and forest administration in France began in 1966. Forestry

training is involved in the implementation of this policy change. Formerly under the Department of

Waters and Forests, which is part of the Ministry of Agriculture, forestry training is now within the Department of Agricultural Education.

Flow Chart XI next summarizes the training for the main categories of forestry personnel.

6.2. L'Ecole Nationale du Génie rural, des Eaux et des Forêts

The Forestry School at Nancy was a Department of the University of Nancy. Until the change in policy the Nancy Forestry School was called "L'Ecole Nationale des Eaux et Forêts." Now the name is "L'Ecole du Génie Rural et des Eaux et Forêts" (Nancy and Paris) as per the decree of September 21, 1965, and the School is under the Ministry of Agriculture.

The main aims of L'Ecole are as follows:

1. Assure the recruitment of Ingénieurs du Corps du Génie Rural, des Eaux et des Forêts by la Métropole, les départements d'Outre-Mer, Cooperation technique and research centres.
2. Train Ingénieurs civils du Génie Rural, des Eaux et des Forêts.

Graduates of the higher level training programs indicated on Flow Chart XI are employed usually at one of three main levels, i.e. — administration, technology, or supervisory.

In 1966 the policy change seemed to indicate that the Nancy School of Forestry was being moved to Paris. However, in January 1967 the School of Rural Engineering, Woods and Forests opened a branch at the former School of Forestry at Nancy, i.e. — The National Centre of Advanced Forestry. This centre has three aims, i.e. — to train civil engineers for forestry in France and overseas; to teach one to three terms of forestry to students of the parent school; to provide refresher courses for employee engineers of the Corps des Ingénieurs du Génie Rural, des Eaux et Forêts.

6.3. L'Ecole Nationale des Ingénieurs des Travaux (formerly L'Ecole Forestière des Barres)

This school is located at Barres 130 kilometres south of Paris. Its purpose is to train forest engineers (Ingénieur des Techniques Forestières).

The admission requirements are a baccalaureate plus two years to prepare for the three day entrance examination. However, a few are selected from lower level forestry personnel on the basis of an equivalent in maturity and experience. The course is three years in length.

The student body of 40 to 45 per class in one year are mainly sponsored by the state. There are a few so-called free students paying their own way. About 50% of a class are from other countries, particularly French overseas colonies, past or present.

6.4. L'Ecole Supérieure du Bois-Paris

This school specializes in wood technology and complements the forest technology course at Barres School. The school is operated in conjunction with the Forest Products Laboratory (CTB) in Paris, but is administered separately.

The purpose of the school is to train Ingénieurs du Bois (Wood Technologist or Engineer) who are employed by wood-using industries and in the teaching profession. The course requires two years of preparation and is three years in length. It is comparable to the course given at the Wood Technology School at Rosenheim, West Germany.

The student body averages 30-35 students in one year for a total of about 100 students in the three years.

6.5. L'Ecole Forestière de Meymac

This is one of several such regional forestry schools whose purpose is to train assistant technicians and technicians. In effect, the two or three year course requires the completion of a Grade 10 (Ontario) level education and then the student can attend Meymac to specialize in forestry for two years to the equivalent of Grade 12 (Ontario) and graduate as an assistant technician. If the third year is completed successfully, the student graduates as a technician. It will be noted on Chart XI that an alternative is to complete the equivalent of Grade 12 (Ontario) and then after the successful completion of the third year at Meymac the student graduates as a technician.

During the first year at Meymac the course is general plus biology. The second year specializes in forestry and includes 6 months of practical training and 3 months on-the-job as an apprentice. The third year is a continuation of the second year. The usual starting class is 50 students with about 30 students in a class graduating.