



Forest Research Branch

Report on tours of Austrian forestry
establishments, August-September, 1963

by

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In the course of a vacation in Austria, Switzerland and Germany, many forests and research establishments were visited. This report is to describe the features at the more important of these and to point to some practices which are strange to the Canadian forestry scene.

1. The private forest of Mr. G. Schmid-Schmidfelden at Wilhelmsburg near St. Poelten (Province of Niederoesterreich) in Austria is 750 acres in size and consists of coniferous, deciduous, and mixed plantations ranging in age from 5 to 80 years. Under the direction of Mr. Uhlmann, forest manager, it yields logs for veneer and lumber, poles, posts, and firewood and affords hunting of game animals, mainly deer and hare. Forest products are sold in nearby towns and hunting is restricted to private parties. All forest and game harvests are under the jurisdiction of the federal government; they are not permitted to exceed prescribed limits. Harvesting is done by Mr. Uhlmann and two seasonal helpers, using horses or tractors for skidding.

The rainfall at nearby St. Poelten is about 47 inches per annum and the evaporation is low, even in summer. Soils on the Schmid forest are chiefly well-drained, yellow brown sandy clay loams on upland till. Small areas of wet land are found on seepage slopes and in some bottomland situations.

Land ownership patterns in Austria are changing; the trend is toward larger holdings which offer improved economic chances. In keeping with this aim, small dairy and forage crop farm establishments on the Schmid property are being moved to large acreages on better soil and tree plantations are being set out on the abandoned pastures and fields.

Planting stock is raised in Schmid's private nursery, a fenced enclosure about 1 acre in size on a warm southfacing till slope (Figure 1).



Figure 1. Five year old spruce in a private nursery, Schmid's Forest, Wilhelmsburg, Niederoesterreich.

Coniferous and deciduous stock (Norway spruce Picea excelsa, European larch Larix decidua, Scots pine, Pinus sylvestris, fir, Abies alba, beech Fagus sylvestris, birch Betula sp., alder Alnus sp., oak Quercus sp.) is raised to 3 to 5 years of age in the nursery then planted out in cut-overs and pastures. The seedling heights vary in size between 6 and 18 inches.

Small plantations of nut trees and chestnut (Castanea sp.) are set out on south slopes; the nuts are in good demand and the wood is readily marketed to the furniture industry.

Protection is necessary for trees in old pastures or other situations where browsing is a problem. One long stick is punched into the ground beside each tree so that it extends above the terminal. In addition a 12-inch long aluminum foil strip is wound around each stem to discourage browsing of lateral branches.

On sloping till sites where mixtures of spruce, pine and oak are planted, annual leader growth of two feet per year is common. The oak litter is said to improve the soil and the tree crowns form the coniferous top growth. Spacing varies from one meter square to two meters. Openings in the young plantations are filled with larch, which is the fastest growing species in the area. Wildlings of all species are preferred over planted stock from nurseries in other areas of Austria; they are used to supplement supplies from the Schmid nursery.

Land which was formerly in moist pasture has been planted to larch and spruce, and Scots pine. Average stand height is 20 feet at 17 years. Small alder plantations have been established on very wet sites. Larch and birch were also planted in mixture on wet sites; the birch is to be removed after the larch stems have been formed.

A plantation of beech with some spruce was visited; beech diameters ranged up to 12 inches. The hardwood logs are sold for veneer at prices up to 600 schillings per festmeter (\$24.00 per cubic foot solid). Polewood from coniferous species from this and other plantations is sold for 400 schillings

per festmeter (\$16.00 per cubic meter solid). Stacked firewood is sold in the forest for 90 schillings per raummeter (\$3.80 per cubic meter stacked or approximately \$13.50 per cord); the price in nearby villages is 110 schillings (\$4.40 per raummeter of \$15.70 per cord) (Figure 2).



Figure 2. Stacked firewood and telephone poles in a spruce-beech mixedwood forest, Wilhelmsburg, Niederoesterreich.

2. At Lilienfeld, Niederoesterreich, a monastery maintains a 35,000 acre forest in high foothills; forest products and wild game furnish income for the upkeep of the institution. (Figure 3).

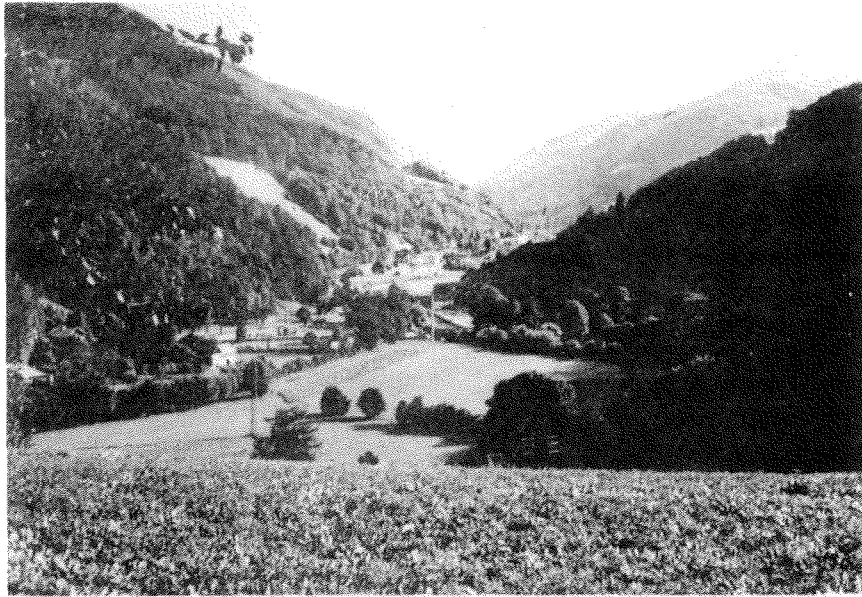


Figure 3. A portion of the Lilienfeld monastery forest, Niederoesterreich.

The annual cut is 40,000 festmeters (cubic meters solid; roughly 18,000 cords) per year most of which goes to the monastery-owned sawmill and new insulation board plant in Lilienfeld. The plant utilizes wood waste from the mill, windfall and otherwise unsuitable wood. The pieces are broken into small particles (about quarter-inch cubes) then fed into a binding mixture before being formed into boards of various sizes. The monastery owns the patent for the process and sales are very satisfactory.

Dr. Louis Steigenberger, Forstmeister, is a graduate of the forestry school at the Hochschule fur Bodenkultur in Vienna. He toured us through

extensive conifer forests of spruce and pine, forests under harvest, and nurseries of spruce and pine at the homesites of district foresters on the monastery limits.

3. Excursions were made in the town forests of St. Gilgen by Wolfgangee (Province of Salzburg), Axams, Seefeld and Igls (Tyrol), Obertsdorf (Bavaria, Germany), and in the Bregenzerwald in Bavaria. They are managed under a system of continuous harvest (Dauerwald) to produce lumber, poles, and firewood. Such was the case at Seefeld (Figure 4) where clearcutting is discouraged because of the high recreational value of forestland in the Tyrol.



Figure 4. Telephone poles and branchwood (for fuel).
Seefeld, Tyrol.

4. The Hochschule fur Bodenkultur (80 Peter Jordan Strasse, Vienna) houses the main forestry school in Austria. It is a large institution in a spacious renovated hospital in the suburban 14th district of the city. Laboratory space is very adequate and equipment and staff is slowly being built up. Dr. Franz Hartmann is retired professor of forest ecology and head of the school. He discussed the curriculum briefly and then introduced me to Dr. Anton Krapfenbauer, professor of forest geography. A tour was made of the soils and land classification section where monolith displays of Austrian forest soils were seen together with maps of forest soils for management planning. Most research in soils and site seemed to be directed to demonstration of the use of such information on small experimental units. In addition research is underway to accumulate data on the chemical and physical qualities of important forest soils.

Mr. Ernst Pflugbeil, assistant in the Department of Geodesy described the instruction given in photogrammetry and photo-interpretation at the Hochschule. The lab is well equipped with stereoscopes, a Zeiss Stereotop and other higher order instruments. Mr. Pflugbeil has developed a comprehensive research project in co-operation with Mr. Helmut Lackner of the Federal Forest Research Laboratory at Shoenbrunn in Vienna. A large forested area of mixedwood in the Province of Steiermark was flown at three elevations with three types of film to test photo scale-film type combinations best suited to species identification and photo measurement of forest stand characteristics. Because of a shortage of trained photo interpreters, the data and photographs were sent for interpretation to the International Training Center at Delft, Netherlands. This arrangement was made possible through the European Organization for Studies in Experimental

Photogrammetry.

5. Foresters visiting Vienna would be well advised to spend an hour or so in the Niederoesterreiches Landes Museum in the city for an orientation in glacial history, soils, foresty geography and industry in the Province of Niederoesterreich. Most Austrian provincial capitals have natural history museums covering climate, soils, physiography and cultural history and a few hours spent in these institutions improves one's orientation a great deal.

Additional observations:

1./ In Austria, where labor is cheap compared to America, and where the value of forest products is high, considerably more time, capital, and labor can be devoted to the production of a unit of output. Examples are the vast areas of plantations which have been established to replenish the forest inventory following the heavy drain of World War II and the rehabilitation period, the extensive practice of selection cutting for specific production (vaneer logs, telephone poles, vineyard props), and the periodic removal of windthrow and mortality for various uses. Most products of the forest are saleable, even branchwood is sold for fuel. Until recently, litter from deciduous forests was raked for cattle bedding, but this practice has been stopped because of evidence of site deterioration.

2./ Research at the Hochschule and at the Schoenbrunn station is inclined to be applied, because of the element of rehabilitation in Austrian forestry. For example, land ownership patterns are being studied and altered to improve the economic chance in forest management.

Addendum to: "Report on tours of Austrian forestry establishments, August-September, 1963".

Photogrammetry and photo interpretation equipment at the Hochschule für Bodenkultur in Vienna is varied and serves adequately for instruction purposes.

A multiplex is used in explaining the properties of the aerial photograph, tilt, orientation and so on. It is a pre-World War II model by Zeiss-Jena (now Jenaoptik Jena GmbH). (The multiplex utilizes direct projection and the recreated terrain, or model, is observed directly without intervening lenses, prisms, or mirrors. The stereoscopic model is made visible by the anaglyph principle, wherein one photograph is projected in red and the alternate one in blue, and correspondingly colored eyeglasses are worn by the observer, red over one eye and blue over the other¹.)

Two stereotopes (Zeiss Aerotopograph, Munich) are for instruction and research. They are third order instruments for topographic mapping. One of the stereotopes has an adapter for work with transparent glass diapositives (not paper prints) which gives higher accuracy.

Six stereopantometers are used to map flat terrain at photo scale and for photo mensuration on either diapositives, using a light table, or on paper prints. These instruments are pre-World War II models made by Zeiss Jena and are still being produced in East Germany. Basically the instrument is the same as the "Stereopret", made by Zeiss-Munich. It is a combination of a mirror stereoscope and stereomicrometer. The stereoscope is fixed but the photos are on a movable plate (Bildträgerwagen).

1 The Manual of Photogrammetry. Second Edition. American Society of Photogrammetry. p. 663.

Pocket stereoscopes from Jenaoptik of East Germany (2.5 power) and from Zeiss-Munich (2.0 power) are used. The Abrams stereoscope is considered to be superior but it is more expensive. There is no stereomicroscope on the European market which can be used in conjunction with the pocket stereoscope (as the Abrams stereoscope and height finder) although Zeiss-Munich is investigating the possibilities of its production.

With the permission of the U.S. Forest Service, researchers at the Hochschule für Bodenkultur have reproduced and adapted Moessner's photo interpretation equipment including a parallax wedge, density scale, and crown diameter scale.

Mapping from single photographs is done with the LUZ (Luftbildanzweizer) of Zeiss-Munich which is similar to the sketchmaster.

At the nearby Schönbrunn research station of the Austrian Forest Service, similar equipment is available. In addition higher order mapping instruments are used (Wild Autograph A8 and A6) as well as Wild mirror stereoscopes (ST3) for photo interpretation.

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