

September 22, 1936

FOREST OF PRINCE SCHWARZENBERG

Near Hluboka, Czechoslovakia

Revier: Welechwin

Area: 2,140 hectares -- 60 hectares in roads and otherwise not stocked.

Altitude: 450 meters

Rainfall: 500 millimeters (about 20 inches) well distributed throughout year

Yield: 8,400 cubic meters annually. Of this amount, 7,000 cu. m. is in final fellings and the balance (1,400 cu. m.) in thinning young stands. 65% of cut is in sawlogs, 10% pulpwood, 25% firewood.

Species: Scotch Pine, Spruce, Silver Fir, Beech, Larch, Birch.

Nine men are employed in this Revier (district): 1 forester, 1 assistant forester, and 7 guards.

This forest has been under a working plan since 1852 and this plan is revised every ten years when a new inventory is made. This inventory shows amount in each diameter class and value can be computed from this. The average annual net income is now about 100 kronen per hectare. Before the depression this came to six or seven hundred kronen. There are two taxes: (1) A land tax based on the value of the land (for this forest it is 20 kronen per hectare per year) (2) Income tax which is on a graduated scale up to 60%. The relative importance of these two taxes may be seen in the totals collected in Czechoslovakia. These were: Land tax, 300 million kronen; Income Tax, 1200 million kronen.

Properly stocked forest land here is valued at about 2,000 kronen per hectare (?) 20% represents the value of the land.

This forest is typical of many in central Europe and they may be said to have gone through three phases. The first came when there were still ample stands of virgin forest in Europe which meant unregulated cutting, followed by heavy grazing and degeneration of the soil. The second phase which began roughly about 1800 saw planted stands of pure spruce, scotch pine and other species which had a high commercial value. Under this method, however, the productivity of the soil declined. Virgin stands of beech, spruce, silver fir, scotch pine have a volume of 750 c. m.

per hectare and this volume is maintained for the first generation afterwards. The second generation of a planted stand of pure spruce has a volume of 500 cu. m. and the third generation will show less. This led to the third phase in European forestry which began about 1900. This is selective cutting and regeneration of mixed species (including beech or other broad-leaved hardwoods) that will maintain the productivity of the soil.

This Revier Welechwin has gone through all three of these phases and now selective cutting is employed. A cut is made in mature stands every three or four years and the worst trees removed. The open spaces are then planted if this is necessary to insure a proper mixture of species, otherwise natural reseeding fills in the open spaces.

FOREST OF PLOCKENSTEIN

Owner: Prince Schwarzenberg

Location: In Bohmerwald Mountains. This is a ridge separating Austria, Germany, and Czechoslovakia

Altitude: 1,200 meters.

Rainfall: 1,000 millimeters (about 40 inches)

Climate: Severe - 30 to 40 degrees C. in summer - below zero with heavy snows in winter

Area: 20,000 hectares

Present Stand: 5,500,000 cubic meters or average of 285 cu. m. per hectare

Annual yield: 115,000 cu. m. or 6.2 c.m. per hectare per year of the wooded area.

Species: Spruce (most important), silver fir, beech, mt. ash, elm, etc.

The forests of Plockenstein were virgin woods about two hundred years ago. They had not been exploited because of their location in the mountains and the difficulty of transportation. In 1730 an engineer named Rosenauer began the construction of a canal fifty three kilometers long flowing into the watershed of the Danube. The principal product was firewood, which was sold in Vienna. This canal was a very skillful piece of engineering and was so laid out that logs and cordwood could be floated to the Danube or to the Moldau.

The most important product now is sawlogs and in 1850 the canal was reworked to permit the floating of 70 ft. logs. Vienna is no longer an important market and practically all the timber cut is now assembled at a yard at Salnau from where it is shipped all over Europe.

Even in 1730 when this exploitation was first begun, Prince Schwarzenberg ordered that it be carried out on a sustained yield basis. In this area the underlying rock is granite and the sandy loam soil is favorable for tree growth. Agriculture is impossible except in the valleys where pastures and small farms are found. The population of this region is dependent on forest work. Felling is done during the summer and autumn and as soon as enough snow has fallen the logs and cordwood are hauled to the edge of the canal. When the snow melts in the spring they are floated down to Salnau.

The proper exploitation of this forest has left a very valuable stand. The average shown is 285 cu. m. per hectare, but some individual hectares have as much as 1,000 cu. m. The average volume for mature (100 year old) stands is 575 cu. m. per hectare which is higher than the virgin stand. The forest law (in Czechoslovakia) permits a minimum rotation of 80 years, but this is on a 100-year rotation. (100-year rotation means that approximately 1/100 of the stand is cut each year.) Selective cutting is used and wherever possible the stands are re-stocked by natural regeneration. Otherwise clear felling and replanting is done to insure the proper mixture of species -- about eighty hectares are planted each year.

FOREST OF SPESSART

Revier: Rohrbrunn

The forest of Spessart was given by the Emperor Otto I to the Bishop of Mainz in . It was generally believed then that the world would come to an end in the year 1000 and the Emperor wanted the Bishop to assure him a place in Heaven. This forest of about 150,000 acres was highly valued as a game preserve and the Bishops closed it against settlement, timber cutting or exploitation of any kind. The area was carefully protected and the penalty for trespassers or poachers was death. The only clearing came during the period of the Thirty Years War from 1618-1649. During this time many peasants fled into the forest for safety and cleared fields, cultivating them for only a few years. After this, however, no further exploitation took place until the time of Napoleon when the rule of the Bishops was ended and their territory became a part of the Kingdom of Bavaria. Since that time the forest has been under sustained yield management by the Bavarian State Foresters and the first thinning was done in 1825.

The principal species here are oak and beech and some of the oak trees are 1,000 years old. Due to their age and high quality some of these trees sell for as much as \$2500 each. Hence, the purpose of the management is to preserve and maintain the quality of the stand. A 300-year rotation is used for the oak and 150-year for the beech.

The trees to be cut are selected very carefully. No tree is cut until its age and condition indicate that it is mature or will no longer increase in value. When any cutting is done particular care is taken to see that no open spaces are left that will cause the remaining oak trees to put out small branches. The ideal is to leave the proper density of oak and beech that will grow clean, straight boles on the oak trees. In some parts of the forest there are oak trees three hundred years old which are not yet considered ripe for cutting.

The cutting is done in November and the valuable oak trees are cut by cutting the roots below the ground and sometimes a hydraulic pump is used to push them over slowly. When the tree is down an expert marks how each tree is to be cut up so as to bring its maximum value. Each log is then numbered and described in a catalog and a day is set for an auction. In the meantime the various buyers (veneer and furniture works) inspect the logs and attend the auction to bid on the ones they want.

The Revier of Rohrbrunn consists of 5,400 hectares and 4,200 cu. m. are cut annually.

On another Revier of 10,600 hectares the total cut was cu. m. of which 7,500 cu. m. was oak. The total receipts for this area were R.M. 1,200,000 of which 40% is net.

The German equivalent to our CCC Camps are compulsory for all able-bodied German boys when they reach twenty. The service is for six months. A camp consists of 216 men who are in charge of a commander (not military) 4 under officers and 12 foremen.

The summer schedules are as follows:

7:00 A.M. to 2:00 P.M. work
2:00 P.M. to 4:00 P.M. lunch and free time
4:00 P.M. to 7:00 P.M. sport and one hour education

The men receive clothes and complete maintenance plus 25 pfgs. per day.

FOREST OF COUNT VON ARNIM, MUSKAU

The forest management plan here is revised every ten years and volumes estimated by sample plots. The aim is to retain the proper ratio of age classes. The annual cut is the area divided by the rotation, which in this case would be 25,000 hectares divided by 100 year rotations, equalling 250 hectares cut over each year. The estate has been owned as a trust since 1908 and its provisions make the eldest son first officer of the trust. The idea was (1) to insure sustained management as a matter of public interest, (2) to preserve the Park of Muskau, which is of particular interest and beauty, and (3) the net revenue is distributed among the members of the family according to an established proportion.

This estate is a complete forest unit, as factories have been built to utilize not only the products of the forest, but the clay and lignite coal which are found on this property. There is a sawmill, paper mill, factory to make coal bricks, brick plant, and ceramic plant to make clay pipes, containers, etc. The area is divided into four administrative forest divisions and the transportation division is separate. More than fifty trained foresters are employed. Approximately 2,000 families are dependent on work in these factories and in the forests. The forest yield per year is 72,000 c.m.

Careful records are kept which contain information enabling the establishment of a definite management plan. This consists of (1) Description of the forests and principles of management. Also, a yield calculation graph of the area in various age classes and diameter classes, (2) Books are kept showing the amount of timber to be cut from each area. Columns are provided in which are entered the work prescribed by the foresters and opposite are columns showing the cuttings actually done, (3) The same kind of books are kept for the thinnings, and (4) All blank areas are reforested.

Short explanation for the inspection of the Graf von Arnimschen Waldgutstiftung "Standesherrschaft Muskau O/L". The enclosure shows the subdivision of the "Timber Trust" (Waldgutstiftung) in its special departments.

--00000--

History: Owners since the 10th century A.D. The governing house of Bohemia, the dukes of Brandenburg, the noble houses of von Ileburg, von Kittlitz, von Penzig, von Biberstein, von Schoneich, Count Dohna, Count Callenberg, Count Puckler, the son of whom, Duke Herman Puckler, creator of the park, was the owner of this estate from 1811 to 1845. The successors were the Counts von Nostitz and Hatzfeld-Schonstein and then from 1846 on Prince Frederick of Holland. The heirs of the latter transferred the estate in 1883 to Count von Arnim. He was the owner from 1883 until his death in 1919; from 1919 followed Count Adolf von Arnim, and thereafter Count Hermann von Arnim. In connection with the political events which took place after the war, the "Standesherrschaft" was transformed into a "Timber Trust" (Waldgutstiftung).

Geographical Location: The estate is located in the county of Rothenburg O/L, province of Silesia, between the rivers Neisse and Spree. The estate is about 26,800 hectares large and forms an almost complete unit. The following state-railway lines cross the estate; Berlin-Gorlitz, Weisswasser-Forst, Weisswasser-Teuplitz, furthermore the following state-highways: Muskau-Bautzen, Berlin-Gorlitz, Muskau-Priebus, Muskau-Triebel.

Description of the geological location of the woods:

Location: The Muskauer woodland is located in the end territory of a moraine. The countryside is wave-like. Aside of the Neisse-valley there are no other canyons of larger proportions. The height above the sea-level is 100 to 160 m.

Climate: The climate is moderate. The yearly rainfall amounts to about 650 mm.

Soil: The soil belongs partly to the Teriar, Diluvium and the Aluvium. The primary rocks are nowhere to be seen. Sand, loam, clay, moors and gravel are changing in different thickness and density. The level of the groundwater is deep. Large deposits of lignite has been ascertained underneath the territory.

Species of trees: Almost exclusively (97%) pine (*pinus silvestris*). The remaining part is spruce (*picea*), oak (*quercus*), birch (*betula*) and other foliage trees.

Organization of the forestry: The first survey took place in the year 1860. The forests were divided into about 700 sections (Jagen). The size of a normal section (Jagen) in quadratical form is 46 hectare. The

sections are now divided by larger and smaller paths through the forests, which run from north to south and from east to west. Since the year 1862 the administration is being handled according to viewpoints of forestry technics. The first budgets (Betriebsplane) were compiled in the year 1889 according to the calculations of the Prussian State. Since 1904 these budgets are composed along the lines of calculations of the respective bureau of the state of Saxony and are newly drawn up every ten years. Since 1904 the rules has been established to revolve timber cutting within one hundred years, whereby during one year no timber will be cut. The cutting is done mainly from east to west, partly also from north to south.

The age of the forest at the present time is as follows:

bare wood -	1-20	21-40	41-60	61-80	81-100	over 100 years
land ha	190	5160	2900	3930	4800	4350 2000

During the last years about 600 hektar have been sold for the creation of small farms.

The amount of timber which is being cut yearly is at the present time about 70,150 fm (logs) Derbholz). This is about 2.9.fm per year and per hektar. The amount of timber available was estimated at the time of the last assessment at about 3 million fm which is about 126 fm logs (Derbholz) per hektar. At present there is a new assessment which will probably show an increase. From the yearly cutting of timber about 70% are resulting from the "general cuttings" (Hauptnutzung) and about 30% of the "preliminary cuttings" (Vornutzung). The general cuttings result in bare sections (Kahlschlagen) and are also made from so called "Plenterschlagen". The "Preliminary cuttings" result from cutting timber in younger forests yielding about 1 fm per hektar. The "preliminary cutting" will be increased in future.

The timber (Derbholz) yields about 93% of useful lumber (Nutz-Holzer).

The yearly cut of timber is ordinarily divided into the following classes:

Timber for building purposes and lumber mills	ca.	35,000	- fm.
" " mines	"	3,000	- fm.
" to be used for cardboard manufacturing	"	27,000	- fm.
firewood	"	5,000	- fm.
	Sa	70,000	- fm.

From the timber for building purposes and for the use of lumber mills about 20,000 fm are being cut in lumber mills belonging to the state. The remaining part is sold. The sales possibilities are advantageous, because the woodland is easily accessible.

The timber for mines is needed for the mines which belong to the estate and the timber for the manufacturing of cardboard for the own cardboard factory. (For details please see enclosure)

Future policy for the maintenance of the woodlands:

The pine will also remain in future the main species of trees. We endeavor to raise forests with different kinds of trees by planting foliage trees. The bare acreages are replanted either by plantation methods or by seed. Certain sections of the forest will naturally be rejuvenated. It has partly been started to make reserve cuts which will be increased according to more recent viewpoints.

Forest protection: The pine trees have been hit by several calamities during the course of the last years. During the year 1906 to 1908 appeared the bombyx pini and lipavis monacha through which about 1,000 hektar were annihilated. In 1924 panolis piniperda, which however only ruined about 50 hektar. The bare sections in the forests resulting from cutting lines of woods (hiebszuge) has been of great help in this connection.

The forest is greatly endangered by fire. A well equipped system of fire alarm with 10 watch towers enable us to find out quickly the exact location of the fire, thus creating the possibility of bringing immediate help. There has been no major damage caused by windfall and snow storms. In spite of the calamities described above it has been achieved to maintain an equableness in timber cutting and the density of the forests.

Forest administration: There are the following kinds of game on the estate: elk, deer, roes, boar, hare, rabbits, Auerwild, Birkwild, feasons, partridges, ducks; there is a deer-garden of about 2500 hektar.

It is intended to make a special excursion through the for-estries Muskau and Skorbersdorf and the foreries Weiss-Wasser and Jagdschloss, furthermore to inspect the part, the card-board factory and the wood mills.

Muskau O/L, den 11 August 1934

FOREST OF ROMINTENER-HEIDE

Location: Near Lithuanian border in East Prussia

Owner: State of Prussia

Area: 25,000 hectares

Rainfall: 700 mm

Species: Scotch pine, spruce, oak, linden, alder, birch, hornbeam, aspen.

Yield annually: 110,000 c.m. or about 4 c.m. per hectare

Altitude: Up to 300 meters

Soil: Sand loam with small swamps

This area was one of the most favored hunting grounds of the German Kings. Visit to Castle -- the whole area is fenced since 1890 and the finest stags in Europe are found here. Red Deer, Roe Deer, Wild Boar, Fallow Deer.

In 1850 almost all the forest was damaged by an epidemic of nun moth. Reforested with pure stands of spruce. Since 1933 another attack of nun moth (one-half million cu.m. timber cut out) but this stopped by spraying arsenic and contact poison from airplanes -- 10 planes used for this. 4,000 hectares forest saved. Cut over places now being reforested with broad-leaved oak, scotch pine, some spruce, (natural regeneration), birch, alder. Working plan is to change pure stands of spruce to mixed stands. Selective cutting employed wherever possible but game does so much damage that small areas are cut, fenced and planted.

New hunting castle built by Goering. Norwegian style of the old castle -- built of wood.

PENINSULA OF KUHRISCHEA NEHRUNG

The Peninsula of Kuhrischea Nehrung connects part of East Prussia with Lithuania and forms the Kuhrischea Haff. This Peninsula affords an interesting example of forestry done with the main purpose of holding the soil and affording the people in the villages of Pilkoppen and Rositten firewood and grazing areas.

Neolithic implements are found on the Peninsula and it has been inhabited for many centuries, but during the Thirty Years War (1618-1648) the forests were cut away and sand dunes started forming in their place. This process continued and by 1880 seven villages had been completely destroyed by the shifting dunes. About this time a forester named Eva started some reforestation work to save the two above named villages -- especially Pilkoppen.

Because of the shifting dunes and the prevailing northwest winds from the Baltic Sea, it is extremely difficult to get trees to grow. First stakes are driven in squares of about ten feet to hold the sand so grass and other plants will grow and add humus to the soil. After some years this is followed by planting trees. Originally, *Pinus Montana* was planted in pure stands. This was done always on the fore dune or the one on the windward side next to the Baltic, except the area near Pilkoppen. Now it is realized that because of the difficult conditions and the poor quality of the trees birch trees should be allowed to come in wherever they will reseed naturally. The only product gathered is firewood. For one-third of the distance they get small timber suitable for mine props.

This is a clear example of the damage that might be done from cutting away the forests, reforestation under extreme difficulties and the effectiveness of forestry in making this peninsula habitable.