

Low woods, on the contrary, only occupy about 1,400,000 hectares; they permit the constant cultivation of a small area, but yields less and less valuable timber. They are mostly to be found on the small estates of Westphalia and the Rhine, and as far as conifers are concerned in the east. Middle-sized timber is still more sparsely represented, as its total amount is only 5 per cent. The low wood occupies 6.8 per cent. of the forest area, and consists chiefly of oak bark wood (Westphalia) Rhine provinces, Bavaria, Baden, Hesse and Hesse Nassau. This form of cultivation, however, is to be found everywhere, more especially on small estates; in the east, in fir forests in the shape of alders; in the west, frequently intermingled with wood for agricultural use, as so-called "hill-felling wood."

Increase Through Afforestation.

The yields are largest in the tall timber woods, in conifer woods and in the state forests; smallest in independent private forests. The total production will gradually increase because of constant afforestation, and the cultivation of tall conifers, and because at present the conifer high woods chiefly consist of young trees (48 per cent. under 40 years' growth, 33 per cent. from 41 to 80 years' growth and 16 per cent. over 80 years). In foliage timber these three grades are approximately divided.

Annual Yield.

According to the latest statistics German forests yield annually about 20,000,000 'fest meter' (1 cubic metre solid wood) of timber and 18,000,000 'fest meter' of firewood, making a total of 38,000,000 cubic metres of solid wood (over 7 centimetres in diameter); they also produce about 11,000,000 cubic metres of loppings, 135,000 cubic metres of oak bark and 101,000 cubic metres of osiers.

South Germany yields the most solid wood, especially large timber, namely, about 14,600,000 cubic metres or 3.6 cubic metre per hectare (39 per cent. of the total quantity), whilst North Germany produces 42 per cent. of the total quantity, and the rest of Germany 19 per cent. The pine forests in Saxony and Thuringia yield the highest average amount of timber (about 75 per cent. of the solid wood), the beech forests the lowest. The state forests, occupying 32 per cent. of the total area, yield 43.5 per cent. of the whole timber and 40 per cent. of total wood production; the independent private forests, on the other hand, occupying 36 per cent. of the total area, only yield 25.7 and 26.6 per cent. respectively.

Systematically Organized Administration.

By far the greater part of the German forests are regulated and subjected to a systematically ordered administration, the underlying principle of which is to fill only as much wood annually as is renewed by growth. This aims at bringing the increase of valuable wood to a maximum. For this purpose different scientific and practically tested methods are employed. Those species of wood are reared which in a given locality produce the greatest economical value. Besides woods of only one species, the planting and rearing of mixed forests is undertaken. The principle methods of rearing are thinning in the earlier stages (the age of thickening) and in the older (pole timber) stage, and clearing in the advanced (timber) stage; by removal of badly grown, malformed and valueless trees and undesirable species, strong and well-formed timber is continually produced, and the rate of the growth on the property raised. At the same time a first yield preceding the plantation yield is attained to the advantage of the forest revenue. The instruction

given in thinning has been especially developed lately in various directions, and brought more into operation with conspicuous success.

The surveillance is exercised by the proper authorities assisted by experts who have been well and scientifically trained in the practice and theory of forestry.

Laws and Regulations.

Laws and regulations regarding forestry vary in different states. In Prussia every restriction pertaining to private forests have been abolished by the edict of September 14, 1811 (Landeskulturedikt). Measures for the complete replanting of public land are embodied in legal regulations only in special cases in Prussia. More has been done in the replanting of trees by other state measures as follows:

2. Encouragement of the formation of scientific forestry organizations.
3. Organization of Chambers of Agriculture (law June 30, 1894), which have branches of forestry.
4. Cheap, or gratuitous furnishing of seeds and plants.
5. Pecuniary assistance by the state to communities and private landowners in the shape of assistance in planting and premiums.
6. Granting of loans at low rates of interest on the part of communities and provinces, and finally,
7. As the most effective means the purchase and replacing of wastes and barren land by the state or communities.

Compulsory Tree Planting.

On the basis of the law regarding the administration of woods belonging to municipalities in the seven eastern provinces of Prussia (August 14, 1876), municipalities may be compelled to plant trees on non-cultivated lands which can be utilized profitably only for wood culture. Under certain conditions the replanting of trees in private forests may be enforced by the provisions of the law of July, 1875, also in Silesia, and by the law regarding protection against damages by floods in the district near the source of the Oder (September 16, 1899).

Education of Forest Officials.

To enforce the existing regulations in a practical and scientific manner has been one of the first cares of the forest authorities of the federal states if only in the interest of their forest policy. The forest state management in Germany has for centuries past been a model for the science of forestry.

Several high schools exist at which the future state forest officials are educated in forestry, mathematics, law and natural science; these schools are also open to others, and are attended by numerous students from all parts of the empire, and from foreign countries. At the same time the schools are nurseries for the advancement and development of forestry and its auxiliary sciences. There are schools of forestry in Prussia, at Eberswalde and Münden, a high school at Aschaffenburg, and at the university of Munich in Bavaria, a school of forestry at Tharandt, in Saxony, one in Wurtemberg, one at the university of Tubingen, one in Baden (technical high school at Karlsruhe), one at the university of Giessen in Hesse, and a college for the Thuringian states at Eisenach; in addition to this, courses of forestry lectures are held at the agricultural high schools in Berlin, Bonn and Halle. At the nine institutions mentioned above,