

timbered as far north as Alaska. There is no white pine but spruce attains perfection in this section.

"The following table shows the area in forests in various countries of the world :

Country.	Area in forests. Acres.	Percentage of total area. Per cent.
Europe.		
Austria	24,172,360	32.58
Hungary	18,777,771	23.52
Belgium	1,243,507	17.08
Bulgaria	3,291,100	12
France	23,466,450	17.92
Germany	34,347,000	25.70
Greece	2,025,400	12.60
Italy	10,131,235	14.31
Norway	19,288,626	24.53
Portugal	1,163,841	5.25
Roumania	4,942,600	15.22
Russia	498,200,000	37.15
Servia	5,763,163	48
Spain	16,354,941	13.03
Sweden	44,480,000	40.65
Switzerland	2,259,018	20.12
Turkey	3,500,000	8.93
United Kingdom	2,695,000	4
America.		
Canada	799,230,720	37.66
United States	450,000,000	23.29
British Guiana	5,760,000	18
Asia.		
India	140,000,000	25
Turkey	17,500,000	
Japan	28,700,000	30.24

OBSTACLES TO EXPORTING MACHINES TO GERMANY.

The United States consulate at Dusseldorf, writes Consul Pettie, is frequently called upon to assist in the adjustment of annoying controversies between American manufacturers of machinery and tools and their German customers, arising from damage to goods in transit, delays in shipments, and vague contracts. These difficulties, unless guarded against more carefully, will become very serious obstacles to the progress of this important and rapidly increasing item of American trade in Germany. Damage to machinery and machine tools in transit has been very frequent, and I have just seen one shipment in which three very valuable machine tools were completely ruined, the cast-iron frames being broken in several places. It is impossible to ascertain whether the damage was done by the railways in America, the steamship companies, or by railways in Germany. Nobody seems to be responsible. It is alleged, however, by those interested that these heavy machines are subjected to very rough handling by the steamship companies. It is said they jerk them out of the vessels with steam cranes, often hooking to frail castings which are not strong enough to sustain the weight. Before accepting damaged machines, the German buyer examines them while in the possession of the railway at the final destination, and they are also exhibited to witnesses before being taken from the depots, resulting in protested drafts, long and disagreeable disputes, and sometimes expensive lawsuits. Delay in the delivery of machines has also in several instances resulted in heavy losses. In one case, an apparatus valued at over \$3,000 was to have been delivered in October, but did not reach Germany until the following February. It had been sold by a German house dealing in American machines, with the agreement that it was to be delivered in November. The result was a suit against the dealer, in which damages for about \$2,000 was demanded, and, in turn, the middleman claimed similar damages against the American manufacturer.

To prevent breakage during shipment, all machines and parts of machines should be boxed, when possible, and the cast frames securely bolted to heavy timbers. In some of these machines, there can be no doubt that the castings are too light for export without careful packing. Contracts should be made in writing when practicable, and should leave no

doubt as to where the responsibility of the exporter ends and that of the German importer begins. In several cases I have found that the American claimed that his responsibility ended when he placed the goods aboard ship in New York harbor, while the German importer alleged that the goods were to be delivered here in good condition. These points should be fully covered in the contracts, and in cases where regular customers order by cable from catalogues, standing contracts covering all these points should be entered into. Much trouble will also be avoided by detailed specifications, which will prevent disputes as to particular parts of machines, and by the delivery of goods within the specified time. Special care should be taken that the bills of lading show clearly that the machines are in good order, and forwarding agents should be given special instructions to carefully examine them at the seaports for cracks, bends and breaks, in order that the responsibility for damages may be easily fixed. While the transportation companies can be made to pay for the goods damaged in transit, the shipper will experience many difficulties in compelling settlement where all of the facts are not clear, and where claims are resisted.

Dusseldorf, being the financial centre and largest city of the great iron and coal district of the German Empire, has become the leading place in the country for the sale of American machines and machine tools and a number of firms employing large capital are engaged exclusively in the importation of these goods. Some of these firms—in fact, nearly all of them—remove the plates showing the names of the American manufacturers and replace them with plates bearing their own names as the makers. To avoid all of these difficulties and save the profit of the German middleman, a number of American manufacturing firms have opened permanent offices in this city, with American engineers in charge, where plans and specifications are prepared, estimates made, and contracts entered into. This system is very much more satisfactory to both the manufacturer and the German firms which buy the machines for use. There can be no doubt that many other American machine tool manufacturers could profitably increase their business by opening offices here, with competent engineers and solicitors.

PRODUCTION AND CONSUMPTION OF COPPER IN 1898.

The development of the electrical industry in Germany is best illustrated by the increase in the consumption of copper. The following interesting figures are collected from statistical returns :

The German copper production, which amounted to 24,688 tons in 1891, had in 1897 risen to 29,468 tons, and is estimated at 30,703 tons for 1898, complete official figures not yet being available.

The German copper consumption was as follows : In 1896 85,160 tons ; in 1897, 96,303 tons ; and in 1898, 101,518 tons. Since 1892, the copper consumption has, according to a statement made by Messrs. Hirsch, of Halberstadt, increased by eighty-one per cent., while the total copper production of the world shows an increase of only thirty-six per cent. for the same period.

Germany's exports of copper ware have risen from 33,093 tons in 1897 to 36,724 tons in 1898 ; the imports, chiefly composed of goods of American origin, have risen to 2,443 tons, an increase of 837 tons over 1897.

England consumed 106,000 tons in 1898, being a decrease of 4,500 tons from 1897. France consumed 55,000 tons, being about 4,000 tons less than the year before. The copper consumption of East Asia is shown to be 20,000 tons in 1898, and that of Russia 6,600 tons.

The world's total copper production amounted to 396,728 tons in 1897, and is estimated at 420,000 tons for 1898. By far the greater part of this increase in production is to be looked for in the United States, whose production was 216,000 tons in 1897 and 234,272 tons in 1898.