Mexico tapping has been going for years. On one plantation (La Zacualpa) there are nearly 4,000,000 trees (of the Castilloa variety). This and a sister plantation showed live trees at the exhibition, from which demonstrations were given of tapping (or "milking") and collecting the latex which, by the use of centrifugal machines, can be converted into solid cones within half an hour. By this process, it is claimed that sheet rubber to suit the market is ready for shipment in three hours, as compared with three days by the ordinary method.

Although the total quantity of rubber exported from Uganda since 1902 has amounted to only 467,040 pounds, valued at $250,000, this was derived chiefly from vines. Ceara was introduced in 1902, and has been found a valuable addition to the country's resources. Three-year-old trees yield an average of 30 ounces of dry rubber per annum, while 8-year-old trees yield 19 ounces in $2^1/_2$ months. Tapping is on the "half herring-bone" system, every alternate day, to a height of 4 feet. Para was introduced in 1901, and makes excellent growth; an 8-year-old tree attains a growth of 35 inches, and yielded $16^1/_2$ ounces of dry rubber in 107 tappings.

Castilloa and Manicoba plants are not recommended for Uganda, the former being subject to attack by a boring beetle and the latter slower in growth than Ceara. There are, it is stated, several rubber plantations in the country, and plants are making rapid and strong growth. The cost of land (freehold) is about 65 cents per acre.

In view of the growing output, which is due not only to the increasing acreage, but also to the fact that as trees develop they give a larger yield each year, it is held by some authorities that the time is approaching when the supply will exceed the demand. Shrewd judges, however, are not of this opinion, because new uses for rubber are constantly being found, and in their view there is a field for much further utilization. White rubber is now extensively used in surgical, medical, and scientific apparatus and appliances, household requisites, and to an enormous extent, for tires. In addition to many other ways, it has yet to be used as a paving in cities in a general direction. Although this use is not new, the chief drawbacks at present are its cost and the need of a perfected method of manufacture.

Samples of rubber paving were laid down in the exhibition by a British company; and recently banks and insurance companies and other large buildings have utilized it in this way. In the opinion of the president of the exhibition, "the problem had made great strides," and he "felt sure before long a process for the application of rubber to street paving would be perfected."

The exhibit of one of the American companies which attracted a good deal of attention was a miniature rubber factory demonstrating modern methods of using guayule rubber in various rubber goods on the market. The process of extraction of rubber from the shrub (a native of Mexico) was indicated by samples taken at different points of manipulation. First, it was shown how the rubber is washed and sheeted; then dried by a high vacuum and low-temperature method. The rubber is next put on the mixing mill, and can be easily worked to requirements. Guayule, it is claimed, is better than it looks. In appearance it is a "somewhat low, softish rubber," but vulcanizes remarkably. Blended with other rubber, it is practically suitable for any grade of goods, and is being used on a large scale. The estimated amount produced in 1910 was 28,500,000 pounds, of which this company produced 15,000,000 pounds. It is marked in a clean condition in bags weighing about 150 pounds. According to the company's statement, guayule is successfully employed in making all classes of belting, packing, hose, valves, mats, disks, and a thousand and one molded articles for all purposes, as well as entering into the composition of boots, shoes and tires.

An American rubber mill machinery manufacturing firm exhibited various machines in connection with the guayule miniature factory exhibit. The machines were not of full size, but were very complete.

In addition to the numberless kinds, classes, and grades of rubber shown, there were exhibits of coconuts, sisal hemp, oilseeds, catchcrop beans of various kinds (including soya beans from the British East African Protectorate), and kapok. The latter was exported from German East Africa and appeared to be of excellent quality. It is not, however, on the London market, but is shipped to Hamburg for sale and export.

In an interesting article written by Mr. Walter Freudenberg, of Bremen, the future supply of rubber is dealt with. He quotes the estimated planted acreages as given by three of the leading trade publications: India Rubber Trades Diary, 776,000 acres; India Rubber Journal, 980,000 acres; Gummi-Zeitung (Berlin), 1,310,000 acres; and he takes the second as a basis for future yields: From Malaya (authority, Sir John Anderson), 70,000 tons; Ceylon (authority, Ceylon Observer), 19,000 tons; Dutch Indies, Borneo, South Mora and Burma, 20,000 tons; total annual supply of plantation rubber in 1916–17, 109,000 tons. To this must be added the probable supply of wild rubber, which until recently has been about 70,000 tons annually. He considers, however, that the supply from this source may decrease, in view of the larger crop of plantation rubber, and estimates only 35,000 tons, making a gross total of 144,000 tons in 1916–17.

As to the present and probable future consumption, it would appear from available statistics that for the year ending June 30, 1910, a total of 76,000 tons was used, showing an increase of about 5 per cent. annually during the past 10 years; and if this rate of increase continues, about 107,000 tons would be required by 1916–17. But this rate of increase does not, of course, take into consideration new uses to which rubber may be put.

The imports of raw rubber by the United Kingdom, Germany, Belgium and the United States, the five principal users, for the first five months of 1911, and for the years 1909 and 1910, are shown in the following table (in long tons):

	First five months.	Twelve months.	
	1911. Tons.	1910. Tons.	1909. Tons.
United Kingdom	20,000	44,000	35,000
Germany	8,400	18,700	15,550
Belgium	4,570	10,550	8,550
France	9,020	19,980	15,220
United States[1]	28,773	87,352	60,312

NOTE.—This table should not be understood to represent the actual quantity of rubber produced in the years indicated, the figures including transshipments from one country to another.

UTILIZATION OF WASTE METALS.

Figures showing the recovery of "secondary" copper, lead, zinc, tin and antimony in the United States in 1910 are summarized by the Geological Survey in the table below. The secondary metals include those recovered from scrap metal, sweepings, drosses, etc. They are called "secondary" to distinguish them from the metals derived from ore, which are known as "primary" metals.

The table gives the quantity and value of each secondary metal recovered during the years 1909 and 1910. The large increase shown in the figures for 1910 was occasioned partly by increased business activity and the growing tendency toward conservation, but is explained in part by the fact that in 1910

[1] Including balata, guayule, gutta-percha, gutta-jelutong, and scrap rubber.

the Survey made a more extensive canvass of the sources of production. As these secondary metals displace equal quantities of primary metal in supplying consumption, they undoubtedly affect the prices of primary metals to some extent now and will affect them even more in the future.

	1909.		1910.	
Metals.	Short tons.	Value.	Short tons.	Value.
Secondary copper, including that in alloys other than brass	25,396	$6,602,960	51,000	$12,954,000
Remelted brass	27,347	5,863,181	62,000	13,032,400
Secondary lead	17,822	3,538,814	29,384	4,868,400
Recovered lead in alloys	23,327		25,939	
Secondary spelter	33,040	3,695,868	41,223	4,744,300
Recovered zinc in alloys other than brass	1,181		2,709	
Secondary tin	2,423	3,281,425	7,217	9,481,800
Recovered tin in alloys	3,092		6,686	
Secondary antimony	27	257,362	9	444,600
Recovered antimony in alloys	1,529		2,770	
Total value	..	23,239,610	..	45,525,500

The total amount of secondary copper recovered, on the assumption that the brass remelted had an average copper content of 70 per cent., was 91,500 tons, of which 15,500 tons was recovered by regular refining plants and the remainder by plants treating only secondary material. At least 30,000 tons was recovered from clean scrap made in the course of manufacture of copper and brass ware, so that only 61,500 tons were obtained from ashes and cinders and from material that had entered the trade in manufactured form and been discarded. The Survey inquiry was extended so as to include the railway companies' figures for old metals reused by themselves, and to these is attributed a large proportion of the increase in the figures for copper. The production from secondary sources in 1910 was equal to about 17 per cent. of the domestic consumption of new copper.

The secondary lead was equal to 11.5 per cent. of the refined lead produced in the United States.

The secondary zinc (including that in brass) equals 23.2 per cent. of the total production as primary spelter in the United States.

The secondary antimony (recovered almost wholly in alloys) shows a large increase and, as the production from domestic antimonial lead ores was comparatively small, the secondary recoveries are the only important domestic source of supply.

The production of tin from ore mined in the United States is negligible, so that the secondary recoveries constitute practically the sole domestic supply. The figures for 1910 recoveries show a large increase over those for 1909, mainly because the quantity of metal recovered from scruff and drosses from tin and terne plate manufacturers was ascertained. There were also several plants which made tin oxide and tin chloride from clean scrap tin. The production of these compounds is calculated as metal to avoid disclosing the output of products having a limited use. Although a large quantity of tin is recovered from scrap by electrolytic treatment, and a smaller quantity is converted directly into oxide and chloride, the principal recovery is made from scruff and drosses, or in alloys.

THE WORLD HOP CROP.

Consul George Nicolas Ifft reports that statistics of the 1911 hop crop are now available, and while the crops in Bavaria and Bohemia, where the finest hops are grown, are only about half those of 1910, the figures show that the world's crop this year was only about 230,000 hundredweight less than that of last year. The area planted to hops in Bavaria was slightly less than last year, while in Bohemia it was practically the same, and in the world as a whole it was only a few hundred acres larger. Brewers who must have the prime Bavarian and Bohemian hops must this year pay high prices, shipments now (Sept. 29) being invoiced at from 70 to 80 cents per pound from Nuremberg; but on the whole there are no indications of a shortage in hop supply.

ACREAGE AND CROP OF THE WORLD.

The following tables give the area planted and total crop of the world for the last three years, the hundredweight used meaning bales of 50 kilos, or 110 pounds.

	Area planted.			Total crop.		
Countries.	1909. Acres.	1910. Acres.	1911. Acres.	1909. Cwt.	1910. Cwt.	1911. Cwt.
Germany	71,568	67,867	65,934	119,000	384,000	222,000
Austria-Hungary	58,148	52,194	51,826	164,000	297,000	178,000
France	6,920	6,920	6,920	27,000	54,000	45,000
Belgium and Netherlands	5,204	4,793	4,942	29,000	58,000	52,000
Russia	20,786	22,407	22,240	60,000	58,000	62,000
England	32,565	32,911	34,595	205,000	296,000	354,000
America	43,635	44,478	46,950	310,000	400,000	400,000
Australia	1,853	1,828	1,828	10,000	10,000	15,000
Total	240,679	233,398	235,235	924,000	1,557,000	1,328,000

The figures for Germany and Austria-Hungary in the foregoing table are based upon complete and semiofficial reports from all hop-growing districts, and those for other countries upon very full reports received by one of the oldest and most reliable firms of hop dealers in this market, and they may be accepted as the best figures at this time obtainable.

RUSSIAN CROP ESTIMATES.

Consul John H. Grout submits a Russian trade journal estimate of the probable amount of grain to be expected in Russia this year. This estimate is based upon statistics gathered between the first and the middle of July last, and is given in the following table, together with the totals for 1910, and the average crop from 1906 to 1910:

Class of grain.	Average crop. 1906–1910. Tons.	1910. Tons.	1911. Tons.
Winter rye	21,280,600	23,839,200	22,154,400
Winter wheat	5,839,200	7,437,600	5,839,200
Spring rye	496,800	376,200	291,600
Spring wheat	12,218,400	15,757,200	12,979,800
Barley	8,922,600	11,064,600	10,443,600
Buckwheat	1,126,800	1,346,400	984,600
Millet	2,417,400	2,899,800	2,039,400
Maize	1,431,000	2,165,400	1,704,600
Oats	14,833,800	16,684,200	14,689,800

Since the foregoing estimate was made, there has been considerable deterioration of the crops. It is possible that a reduction of something like 5 per cent. to 10 per cent. may safely be made in order to arrive at a reasonable estimate of the results of the 1911 crop. Aside from the matter of quantity, reports are arriving to the effect that quality has suffered as well, at least in many parts of the country.

PIG IRON PRODUCTION OF JAPAN.

Consul General Thomas Sammons reports that an estimate