

Country	1905	1906	1907
United States	803	928	1,640
England	193	304	361
France	28	20	20
Portugal	320	629	702
Spain	413	222	222
Italy	36	28	28
German Empire	42	57	57
Austria	65	63	63
Siam			10
Federated Malay States		151	89
Sinkep			1
Billiton			41
N. Territory (Austral.)	71	114	443
Queensland	1,582	865	703
New South Wales	251	270	451
Tasmania	36	22	46
New Zealand	64	121	121
South Africa		9	211
Bolivia	75	75	75
Argentina		326	507
Total	3,979	4,204	5,791

The increased demand for the ores of tungsten since the year 1905 strongly indicates the high appreciation entertained by the consumer for its valuable chemical properties, and the year 1905 may be considered as its successful introduction into commercial activity and importance, from which date the demand and prices have steadily increased.

While the world's production in 1905 was 3070 tons, in 1907 it increased to 5791 tons and sold as high as \$14.00 per unit, the average price for the year being \$8.00.

Near the close of the year 1907 the commercial depression in business, especially in the metal market, caused a drop in the price of tungsten ores to \$5.00 per unit. This had the effect of closing down many of the low grade properties, which previously helped to swell the larger output under the high prices that prevailed during the earlier part of the year.

Until recently \$5.00 per unit for a 60% concentrate was the average price, and as the cost of production at many of these properties was nearly equal to the value of the product, they remained closed, but now, influenced by the present high price of \$9.25 per unit, many of them will, no doubt, again resume operations.

The present high price results from renewed activity in the manufacture of various grades of steel, together with the newer uses that has been found for this metal, chief among them being the large increased demand in the manufacture of tungsten lamps and surgical instruments.

Now that the special qualifications of this metal are recognized and more fully understood, and owing to its scarcity in commercial quantities, those in a position to speak with authority, are of the opinion that the demand will continue to increase far beyond the supply, and that under such conditions, prices must necessarily rule much higher, unless in the near future richer ores and in large quantities are discovered.

The following is from the Mineral resources of the United States for the year 1907, part 1 b. 711, being extracted from a report made to the government by Frank L. Hess of geological survey department:

"During the first nine months of 1907 the business in tungsten ores and products was brisk, prices were high, ranging from \$9.00 to \$14.00 per unit for tung-

sten ore carrying 60 per cent, or over of tungsten trioxide, and there was a large increase in the production, both in this country and abroad.

The demand during the first part of the year, was much greater than that of 1906, and was due mostly to its use in the manufacture of tungsten tool steel. Under the stronger demand, with a consequent rise in prices, prospecting and mining were both actively prosecuted, so that the output of the United States was increased from a total of 928 short tons of concentrates carrying 60 per cent, tungsten trioxide in 1906, to 1,645 short tons in 1907, while the value rose from \$348,867 to \$890,048. In Colorado, the tungsten mines located in Boulder county, again led in production with 1,146 tons of wolframite approaching ferberite in composition, valued at \$373,642.74. California was the second state in order of production, while smaller amounts were produced in Montana, Washington, Nevada, Arizona, and probably in New Mexico. The output from California and most of that from Montana was in the form of scheelite of which a total of 414 short tons was mined.

The tungsten-mining industry of Boulder country, Colo., is largely in the hands of a few companies. The ores ordinarily mined are said to require from 20 to 30 tons to produce 1 ton of concentrates carrying 60 per cent, tungsten trioxide. Richer ores than this are mined, but they are the exception. The larger companies find it impossible as a rule to produce tungsten ore profitably at \$5.00 or less per unit, so that the product for 1908 will undoubtedly be less than for 1907.

The largest individual American producer of tungsten ores, and probably the largest in the world, during 1907, was the Cardinal Company, at Boulder, Colo. Some of the mines are worked down to a depth of about 100 feet."

"During 1907 the production of tungsten increased largely in a number of countries, and of these the United States showed the most notable rise in its output. The production of Australia (including Tasmania), amounting to 1,643 tons, was the only one which exceeded or rivalled that of this country. The output of South Africa, New South Wales and the Northern Territory of Australia, showed especially notable increases. Spain, New Zealand, Australia, and Germany, whose combined production during 1906 was 463 short tons, have not made public their figures of production for 1907, and it seems probable that there will be, in each case, an increase. The latest Bolivian figures obtainable, 75 tons, are those of 1905. It is said that about 507 short tons of wolframite were shipped under the name of iron ore from Argentina during 1907, and although no official confirmation can be obtained, the figures are considered reliable. This shipment being accepted, the world's total production in 1907 was probably about 5,800 short tons.

The occurrence of tungsten is wide, but the individual deposits can hardly be said to be large. In times of high prices there are many deposits which can be worked, that will be idle at lower prices, and considering the great fall in value of tungsten ores it seems probable that the output for 1908 will be much less than that of 1907."

In recapitulating the past history of the occurrence, production, demand, markets, and prices paid for ores (Continued on page 18.)