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"REMARKS ON SILVER"\*

By

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You will note on your programs that I am scheduled to talk on the subject of "Future of Silver." I thank the Chairman of the Program Committee for the compliment, but I must confess at the outset that I am not qualified to make the positive predictions that this title implies. Rather I will try in general terms to cover a little of the recent history of silver and outline its present situation as it appears from piecing together such statistics as are available.

Naturally the price of the metal is our primary concern in these times of rapidly rising costs and when we think about price we must look at supply and demand in the case of precious as well as of base metals. Generally speaking, the position of silver looks favorable - certainly it is much improved as compared to prewar years.

Over a long period of time the ratio of production, and this might also be referred to as the relative scarcity of silver to gold, was about 13 to 1. That is to say 13 ounces of silver were produced to each ounce of gold. In recent years, including prewar years, this ratio has declined until it now stands at 7 or 8 to 1. This means that new silver has steadily become scarcer in terms of new gold and that fact is distinctly in favor of the intrinsic value of silver. As against this is the fact that a considerable portion of the silver that has been produced in the world over the past several centuries is still in existence as silver metal in various forms such as jewelry, sterling ware, coins in circulation and hoarding, and as bar silver in the vaults of the United States Treasury and elsewhere. These constitute a secondary source of supply or reserve as distinguished from the primary supply or current production and this secondary supply will begin to appear in varying degrees whenever demand in excess of current production begins to force prices upward.

Over the five-year period from 1943 through 1947, inclusive, the consumption of silver in the United States, including that required by our Treasury Department for silver certificates and subsidiary coinage, was considerably more than the entire world production for the same period. This means that definite inroads have been made in the secondary supply just referred to.

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\* From a talk delivered at the Annual Meeting of Montana Mining Association, Virginia City, Montana, July 30, 1948.

The world production of silver in 1947 has been estimated at about 150,000,000 ounces broken down approximately as follows:

Mexico . . . . .	59,000,000 ozs.
United States . . . . .	38,000,000 ozs.
South and Central America . . . . .	21,000,000 ozs.
Canada . . . . .	<u>12,000,000</u> ozs.
North and South America . . . . .	130,000,000 ozs.
Rest of the World . . . . .	<u>20,000,000</u> ozs. (Estimated)
Total . . . . .	150,000,000 ozs.

The estimate of production outside of North and South America is based upon the fact that the Americas normally account for 85 to 90 percent of the world production of silver.

Now let us look at consumption in the United States for 1947. We find that it was about as follows:

Sterling . . . . .	55,000,000 ozs.
Plated Ware . . . . .	9,000,000 ozs.
Nitrate (Photography) . . . . .	17,000,000 ozs.
Electrical, Brazing, etc. . . . .	<u>19,000,000</u> ozs.
Industrial Total . . . . .	100,000,000 ozs.
*Treasury Silver Certificates . . . . .	26,000,000 ozs.
Treasury Subsidiary Coinage . . . . .	<u>25,000,000</u> ozs.
Industrial Plus Monetary . . . . .	151,000,000 ozs.

This indicates that United States uses were much more than the total production of all the Americas and were about equal to the entire world production.

However, the entire world production is not available for use in the United States as large amounts are consumed annually in other countries. A measure of these requirements is obtained by comparing the 1947 production outside the United States of 112,000,000 ounces with the 1947 net imports into the United States of 55,000,000 ounces, which indicates that 57,000,000 ounces of the world production found uses outside the United States. Some of it went into Mexican coinage at the rate of 2,000,000 ounces per month commencing in July, 1947.

Where then did the 151,000,000 ounces required for use in the United States in 1947 come from? Production within the United States of 38,000,000 ounces plus net imports of 55,000,000 ounces account for 93,000,000 ounces from which it appears that silver inventories in the United States, including those of the Treasury, declined some 58,000,000 ounces in 1947. Inasmuch as the Treasury absorbed all of the domestically mined silver in 1947, it follows that the industrial consumption of 100,000,000 ounces was made up of the net imports of 55,000,000 ounces and a decrease of 45,000,000 ounces in the domestic stocks available to industrial users. The above seems to indicate quite definitely that silver inventories have been going down and this, of course, strengthens the position of silver as a commodity.

Let us now look at the monetary side of silver. It is thought by many that the Treasury is under somewhat of a strain to absorb the annual domestic production. If so, it would coin no more than the current production less the seigniorage or free silver for which the producer is paid nothing.

It is interesting therefore to see what has actually happened. In the period from 1940 to June 1, 1948, the Treasury acquired from domestic producers 243,000,000 ounces of which 102,000,000 ounces were seigniorage and 141,000,000 ounces were paid for by issuance of silver certificates.

In the same period the Treasury used 505,000,000 ounces as backing for new silver certificates and 423,000,000 ounces for subsidiary coinage, namely, dimes, quarters, and half dollars - a total of 928,000,000 ounces of silver. In other words, the Treasury used up not

\*On basis of 70 percent of U.S. production in 1947 required for backing for new silver certificates. Treasury figures for calendar year 1947 lower due to lag in deliveries of 1947 production to the mint.

only all of the 141,000,000 ounces it was required to use by law but also all of the 102,000,000 ounces of free silver received from the United States mines and in addition some 685,000,000 ounces that had to come from the Treasury stocks of unpledged silver. As of June 1, 1948, it was reported that the Treasury's stock of unpledged silver was down to about 182,000,000 ounces. Incidentally, the 102,000,000 ounces of seigniorage or free silver received from domestic producers brought the Treasury a profit of \$132 million, a nice bit of help to United States taxpayers.

Perhaps a word or two of explanation of seigniorage or free silver is in order. One thousand ounces of silver are worth \$1,290.00 to the Treasury when coined into silver dollars. If the Treasury paid the producer \$1.29 an ounce for all of it, he would get \$1,290.00 for his 1,000 ounces. However, he gets \$1.29 per ounce for only part of it and the part of the 1,000 ounces for which he is paid nothing, but must deliver to the Treasury free, is called seigniorage or "free silver." The Treasury can coin this "free silver" into money and whenever it does so a profit is realized on the transaction by the Treasury. It is one of the best ways of "making money" I know of, but unfortunately the procedure is not available to the silver producer.

The variations in silver seigniorage over the past ten years have been as follows:

In 1936-1937 the Treasury paid the producer for 60 percent of his silver, and retained 40 percent as seigniorage. This meant in effect that for each 1,000 ounces of a coinage value of \$1,290.00 the Treasury paid the producer \$774.00 for 600 ounces by the simple process of converting the 600 ounces into 774 silver dollars. The Treasury retained the other 400 ounces of a coinage value of \$516.00 as free silver.

On January 1, 1938, the Secretary of the Treasury arbitrarily increased the seigniorage to 50 percent which meant that the Treasury increased its margin on each 1,000 ounces from \$516.00 to \$645.00 at the expense of the domestic producer whose income was thereby cut from \$774.00 to \$645.00.

On July 1, 1939, Congress took away the Treasury's power to arbitrarily vary the seigniorage and directed it to reduce its seigniorage to 45 percent and to pay the domestic producer for 55 percent of his silver at the coinage value of \$1.29 per ounce. This had the effect of dividing the \$1,290.00 per 1,000 ounces in the ratio of \$710.00 to the producer and \$580.00 to the Treasury.

For seven years the seigniorage remained fixed at 45 percent with the producer's costs steadily rising, but finally on July 31, 1946, Congress again took action and reduced the seigniorage to 30 percent by directing the Treasury to pay the domestic producer for 70 percent of his silver at \$1.29 per ounce. This divided the \$1,290.00 per 1,000 ounces in the ratio of \$905.00 to the producer and \$385.00 to the Treasury.

There have been some interesting recent foreign developments with relation to silver. In China more and more consideration is being given to proposals to re-establish the silver yuan at a new arbitrary price giving it a position similar to that of the United States silver dollar, and last May the Economic Council of China issued an order making the old silver yuan exchangeable with United States dollars at four to one. This is an initial step in the direction of a return to a silver currency in China. Uncontrolled printing of paper money with nothing back of it has run the exchange rate on paper money against United States dollars to 5,000,000 to one and the need for a new currency with metal backing similar to our silver certificate is becoming more urgent daily. In April of this year the National Assembly urged the Chinese government to open negotiations with Great Britain and the United States for a loan of silver in order to restore China to a silver standard, and I would venture the opinion that no better use could be made of the 314,000,000 ounces of silver loaned by us during the war to Britain and India than to reloan this silver to China under proper safeguards as backing for a new Chinese currency.

Unfortunately there is no early prospect of the return of this silver metal to us from Britain and India. In the latter part of 1946 Britain enacted legislation designed to withdraw all silver coins from circulation by exchanging them for new coins made of a copper-

nickel alloy. The announced purpose of this was the need of repayment in kind of Britain's lend lease debt to the United States of 88,000,000 ounces of silver, and it was expected that by melting down Britain's silver coinage some 220,000,000 to 250,000,000 ounces of silver would be recovered.

However, the British people have developed a stubbornness toward this exchange which the authorities failed to take into account since the silver coins are being released very slowly and with much reluctance. Whereas the original plan called for complete withdrawals of all silver coins within five years from January, 1947, the fact remains that less than 10 percent of the quantity in circulation was recovered in the first eighteen months of the program and as yet not a single ounce of the lend lease silver has been returned. Apparently such silver as has been recovered from melting British coinage has been sold in the market to satisfy Britain's industrial demand of silver which is estimated at between 12,000,000 and 15,000,000 ounces per year.

This disinclination of Britons to exchange their good silver coins for copper-nickel ones of negligible intrinsic value was evidenced by the rapid disappearance of silver coin from circulation. Inasmuch as the silver coins apparently disappeared into hoarding instead of migrating to the Royal Mint where they would have been replaced by copper-nickel ones, the result was an acute shortage of coins for making change in business transactions. Many firms had to resort to postal money orders in lieu of small change and so much inconvenience and confusion resulted that in 1947 the Royal Mint found it expedient to restore to circulation some of the silver coin previously withdrawn for conversion into the debased currency. Thus it appears that a much longer period than originally contemplated will be required to complete the demonetization if indeed it is ever completed.

India received lend lease silver from the United States during the war in the amount of 226,000,000 ounces, the return of which was guaranteed by Great Britain. One of the last acts of the British Government for India prior to the effective date of the release of India from British rule was to enact legislation requiring substitution of copper-nickel coins for all silver rupee coins in the currency system of India and more recently the government of Pakistan has ordered the substitution of nickel coins for silver rupees.

In March of 1947 the Indian authorities banned the import of silver into India presumably to curb a profitable trade by Belgian brokers who bought dollars with Belgian francs, bought silver in New York with the dollars, and sold the silver in Bombay for sterling which was needed in Belgium for the purchase of goods and services from Britain.

The situation in India raises two interesting questions: (1) Will the people willingly exchange their silver rupees for nickel or copper-nickel rupees? And (2) Will the price of silver bullion in India and Pakistan reflect a decrease in the demand for silver for hoarding?

The experience in Britain in withdrawing silver coins together with the fact that the peoples of India have traditionally hoarded silver may give a clue to the answer to the first question and a look at the price of silver on the Bombay market over the past several years will help to answer the second question.

The price of silver on the Bombay market in terms of United States dollars has steadily risen since 1944 although the exchange rate of the rupee with the dollar has remained practically stable during that period. Bombay prices in United States equivalent have been as follows:

January, 1944 . . . . .	\$ .91	January, 1947 . . . . .	\$1.28
January, 1945 . . . . .	1.04	January, 1948 . . . . .	1.37
January, 1946 . . . . .	1.07	July, 1948 . . . . .	1.41

The problem of the domestic producer like that of the gold producer in the United States is one of being squeezed against a fixed price by the rising costs of labor, materials, and services. Since 1946 the return to the producer from silver delivered to the Treasury under the 30 percent seigniorage arrangement has been equivalent to 90.5c per ounce. During that period there have been very substantial increases in base metal prices.

The New York price on foreign and old domestic silver is currently about 75c per ounce, and until such time as the inroads of industrial consumption upon the supply cause this price to rise above 90.5c, the domestic producer will have to look for relief to a further reduction in the seigniorage claimed by the Treasury.

In closing let me emphasize that no taxes are levied by Congress to provide funds for the purchase of domestically produced silver. The producer is in effect paid with silver dollars coined from a portion of the silver delivered by him to the Treasury. At present his payment consists of 70 percent of the silver delivered by him and he can take it in silver dollars or in silver certificates which are exchangeable on demand for silver dollars. Over the years the seigniorage retained by the Treasury has been progressively reduced until it now stands at 30 percent. The silver producers feel that this policy of progressive reduction should be continued until seigniorage has been completely eliminated.

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#### OREGON METAL MINING IN 1948

According to preliminary estimates released by the U. S. Bureau of Mines, gold, silver, copper, and lead production in Oregon during 1948 decreased 22 percent compared to 1947. The value of the four metals was \$547,137 in 1948, and \$701,336 (including a small quantity of zinc) in 1947.

Production of gold in 1948 was 15,060 ounces valued at \$527,110 compared with 18,978 ounces valued at \$664,230 in 1947. Nearly all of this output came from placer gold produced by dredging. The two principal producers were Baker Dredging Company in Sumpter Valley and Porter & Company in the Clear Creek-Granite Creek area.

Gold and silver lode mining was at a near standstill. Only the Buffalo mine in eastern Grant County operated consistently, even if on a small scale. Other properties in a position to produce, such as the Oregon King mine in Jefferson County and the Champion mine in Lane County, were active only a small part of the year even though their ores contain a fair proportion of base metals (in addition to gold and silver) which commanded a high price throughout the year.

The Bureau of Mines does not include production of other metals with statistics for gold, silver, copper, lead, and zinc. In Oregon the Bonanza quicksilver mine in Douglas County produced throughout the year. Its output was small compared with its wartime production, but it was one of the two quicksilver mines in the United States which continued to operate at the end of the year. The Oregon Chrome mine in Josephine County was active during the first half of 1948 but was forced to close in July because of high costs and low market price.

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#### NEW ENGINEERING MAGAZINE

No. 1, Vol. 1 of The Trend in Engineering has just come off the press. This interesting magazine is published by the Engineering Experiment Station at the University of Washington and is designed to report progress in the Station's program of investigation and research. At present the plan is to issue the magazine quarterly, but the Director of the Station visualizes more frequent appearance in the future. The work of the Station is organized into nine divisions as follows:

- Aeronautical Engineering
- Chemical Engineering, Industrial Chemistry
- Civil Engineering
- Electrical Engineering
- Forest products
- Geology
- Mechanical Engineering
- Mining, Metallurgy, Ceramics
- Physics Standards and Tests

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## METAL MARKETS

The February issue of the E&MJ Metal and Mineral Markets, New York, reports that the price situation in major nonferrous metals remained about the same even though there was widespread unsettlement in other commodity markets.

The market situation in copper, although eased somewhat by resumption of work after the strike at Utah Copper, continues strong. Production of crude primary copper in January was 53,701 tons, compared with 54,635 in December.

The supply situation in lead appears to be improving. However, it is felt that consumers are reducing inventories in anticipation of an easier supply outlook for the metal.

Reports are that there is a ready market for all current production of zinc at firm prices. Some producers report that they have encountered somewhat more sales resistance in disposing of their output of slab zinc.

The foreign price of silver has increased  $1\frac{1}{2}\%$  per ounce. The quoted price of platinum decreased \$3 an ounce, effective February 14.

Prices of important metals and mineral products are as follows:

Copper, 23 $\frac{1}{2}\%$ , Connecticut Valley points.	Iridium, \$105-\$110 per ounce.
Lead, 21 $\frac{1}{2}\%$ per pound, New York.	Osmium, \$100 per ounce.
Zinc, 17 $\frac{1}{2}\%$ per pound, East St. Louis.	Aluminum ingots, 17% per pound.
Silver, 71 $\frac{1}{2}\%$ per ounce	Antimony, 38.5% per pound, Laredo.
(Domestic silver, 90 $\frac{1}{2}\%$ per ounce).	Bismuth, \$2 per pound in ton lots.
Mercury, \$88-\$91 per flask.	Cadmium, \$2 per pound.
Tin, \$1.02 per pound.	Indium, \$2.25 per ounce, troy.
Platinum, \$85-\$88 per ounce.	Nickel, 40% per pound, Port Colborne, Ontario.
Palladium, \$24 per ounce.	

Metallic ores

Antimony ore, per unit of antimony contained 50-55 percent, \$5-\$5.10.

Beryllium ore, per unit of BeO, 10-12 percent, \$28-\$30 f.o.b. mine.

Chrome ore, per long dry ton f.o.b. cars New York, Philadelphia, Baltimore, Charleston plus ocean freight differential for deliveries to Portland, Oregon, and Tacoma, Washington:

Indian and Rhodesian, 48 percent Cr<sub>2</sub>O<sub>3</sub>, 3 to 1 ratio, \$38-\$39.

South African (Transvaal), 48 percent Cr<sub>2</sub>O<sub>3</sub>, no ratio, \$29-\$30.

Turkish, 48 percent Cr<sub>2</sub>O<sub>3</sub>, 3 to 1 ratio, \$40-\$41.50.

Domestic, 48 percent, 3 to 1 ratio, \$39 f.o.b. nearest shipping point.

Manganese ore, on long-term contracts involving large tonnages, prices a matter for private negotiation. Nearby business, basis 48 percent Mn, 78%-80% per long ton unit c.i.f. U.S. ports.

Chemical grades, per ton, \$55 in carloads.

Molybdenum ore, per lb. of contained MoS<sub>2</sub>, 90 percent concentrate, 54% f.o.b. mines.

Titanium ore, per gross ton, ilmenite, 56-59 percent TiO<sub>2</sub>, \$18-\$20 f.o.b. Atlantic seaboard; rutile, per pound 94 percent minimum concentrate, 6-8%.

Tungsten ore, per short ton unit of WO<sub>3</sub>, Chinese duty paid \$24.50-\$25; domestic scheelite delivered to buyer's plant, \$28.50 carload lots.

Zircon ore, 65 percent ZrO<sub>2</sub>, \$45-\$48 per ton c.i.f. Atlantic seaboard.

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## STATE GEOLOGISTS MEETING

The annual meeting of the Association of American State Geologists was held in San Francisco February 11-12 inclusive. Dr. Walter B. Jones, State Geologist of Alabama, was elected President for 1949-1950 succeeding Captain Garland Peyton, Director of the Georgia Department of Mines, Mining, and Geology. The Society voted to separate the offices of Secretary-Treasurer and editor of the quarterly, thus distributing the work more equitably. Dr. Maurice M. Leighton, Chief of the Illinois Geological Survey, was elected editor of the quarterly. Dr. Edward L. Clark, State Geologist of Missouri, was re-elected Sec.-Treas.

On February 12 attending geologists were conducted on a field trip led by Dr. Olaf P. Jenkins, Chief of the California Division of Mines, and members of his staff. The party inspected Franciscan formations east and north of San Francisco Bay with especial attention to the Andreas rift zone in the Tamales Bay region.