

BOARD OF GOVERNORS  
OF THE  
FEDERAL RESERVE SYSTEM

## Office Correspondence


Date April 19, 1937.To Chairman EcclesSubject: The copper situationF Lauchlin Currie  
*LC*

Attached is a memorandum on the copper situation, prepared by Mr. Conklin at my request. In general, it tends to confirm the view that the present price of copper is considerably above the marginal cost of a larger than current volume of production. I do not feel, however, that this factor will lead to a sufficient increase in production in the next two or three years to cause a lowering of price. With steadily increasing consumption, producers will, I think, be able to hold back sufficiently on production to obtain an even higher price. It is highly desirable that the tariff on copper be removed, both to forestall the possibility that our price may rise above the world price and to lessen the squeeze on the independent fabricators. The least that should be done is to institute a sliding scale in the place of the flat four cents duty. It might, for instance, be provided that the tariff be reduced one cent for every cent the domestic price is above ten cents. Thus, at fourteen cents there would be no protection, while at ten cents there would be a four cents protection.

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## Office Correspondence

Date April 17, 1937To Mr. CurrieSubject: The copper situationF i Mr. Conklin 

The price of refined copper advanced sharply in the last half of 1936 and the first quarter of 1937, following three years of little change at a level around 8 or 9 cents per pound. At 17 cents per pound the price at the end of March was higher than at any time since the spring of 1930 and, except for 1929, above the average for any year since 1920. There was some decline early in April to  $15\frac{1}{2}$  cents per pound.

The recent rise in copper prices occurred at a time when prices of most metals and of many other commodities were increasing rapidly. Several special factors, however, have had an important bearing on the unusually marked price rise for copper. Copper consumption has expanded considerably and there has been a large amount of forward buying. Output of copper, although increasing, has lagged behind consumption, and inventories of refined copper, which had been in substantial volume for several years, declined in the latter part of 1936 and continued to decrease in the first three months of 1937 to a relatively low level.

The current price for copper appears to be above the cost of production of mines with higher costs than those now operating and many producers are expanding output or reopening closed mines. Domestic smelter production in March was at the highest rate since 1930. Cartel

restrictions in effect in 1936 on foreign production have been lifted for the time being at least. In view of the likelihood of sharp increases in output, it seems probable that by the end of the year prices will be somewhat lower than the recent highs. The outlook for the next few months depends in part upon how long it will take producers to attain the higher probable rate of output expected. These observations do not take into account the possible effects of broad national and international price and monetary developments during the next year.

#### Copper consumption

Domestic consumption of copper in 1936 continued the expansion of the three preceding years. The increase was particularly marked in the latter part of the year and the rate of demand in the first part of 1937 was at about the level of the late 1920's, although consumption by the utilities was still small relative to the amounts used in pre-depression years. In addition to the increased demand for immediate industrial needs, large forward orders, amounting to 3 or 4 times the stocks of refined copper owned by refineries, have been made during recent months.

In European markets the demand for copper has also increased substantially since 1932 as a result of expanding industrial activity. Total foreign consumption in 1936 is estimated to have been slightly larger than in 1935 and at the highest level on record. Recently foreign demand has been augmented by war scares and the resultant race for armaments. In addition to the actual construction of armaments, foreign governments have been building up reserves in anticipation of future shortages or higher prices.

With regard to the prospects for copper consumption in 1937, it seems probable that the copper requirements of industry in this country will continue to increase and that foreign industrial use and consumption for armaments will also increase further or at least remain at a high level. Stocking and forward buying by domestic fabricators and the building up of copper reserves by foreign governments are temporary factors in the situation. With the disappearance of these factors, the immediate demand would probably be less than that which caused the recent sharp advance in prices but more than the demand prevailing prior to the last half of 1936. Chart II shows the consumption of refined copper in the United States and in other countries during recent years. It is estimated that in 1937 domestic consumption of copper refined from both primary and secondary sources will be in the neighborhood of from 950,000 to 1,000,000 tons, about the same as in the late 1920's and about 200,000 tons more than in 1936.

#### Production and inventories of copper

There was a marked reduction in domestic refinery output of copper from both mines and from scrap in 1930, 1931, and 1932, but exports continued the sharp decline which had begun in 1929, and the amount of copper available for domestic use exceeded actual consumption, with the result that stocks held by refineries rose rapidly, reaching record levels in 1932. During 1933 and 1934 domestic copper production continued in small volume, while consumption and exports increased, and stocks declined. During the past two years output has increased substantially, accompanying a

continued expansion in consumption, and indications are that it will show a further marked rise in 1937. The increase has not kept pace with consumption, however, and stocks held by refineries have been further reduced. The current level of stocks is about the same as during most of the 1920's and such that future needs will have to be met almost entirely from production or from imports. The existing tariff of 4 cents per pound practically eliminates foreign copper as a source of supply, although this condition might be changed if the tariff is not renewed when it expires on June 30, 1937. However, the large productive capacity of this country makes it seem unlikely that any substantial amount of foreign copper would be imported with or without a tariff, except perhaps for short periods of time.

With domestic inventories reduced to a level where little additional copper may be obtained from this source for consumption, the expansion in output will have to be large enough not only to meet further increases in consumption but also to provide a supply of copper in an amount which in other recent years has been withdrawn from stocks. Chart V shows by years for the period from 1919 to date the average price of copper, annual production of refined copper available for domestic use, domestic consumption, and yearend stocks. As indicated in Chart V, which shows similar data on a monthly basis since the beginning of 1935, there was a sharp increase in both production and consumption in March 1937. The unusually high level of apparent consumption in that month was probably due in part to large deliveries of copper purchased some time ago.

Production of copper in foreign countries, which had increased considerably during the 1920's and declined by only a relatively small amount from 1929 to 1932, expanded sharply after 1932 and in 1935 was larger than in any previous years. Output in 1936 continued at about the high 1935 level. For this reason it is unlikely that the export market will be as important a source of demand for domestic copper in the future as it has been in the past, despite the increased use of copper by foreign countries. Chart I shows the production of copper in foreign countries as compared with domestic output. In 1935 and 1936 foreign output of copper was restricted by international agreement, while consumption increased slightly and stocks declined. This limitation was doubtless a factor contributing to the rise in price in the latter part of the year and the first part of 1937. The foreign curtailment program was terminated in January 1937, however, and it is expected that foreign production will show a sharp rise, although the increase thus far this year has not been very large.

#### Costs of production

It is believed that domestic producers could supply the copper needed by domestic industry at a price no higher and probably lower than that prevailing at the present time. While there are no satisfactory statistics on the costs of production during recent years, the Tariff Commission made a study of the costs of production in this country and in foreign countries during the years 1928, 1929, and 1930. A summary of the Tariff Commission's findings is shown for the domestic industry

in the table below. The figures are presented both with and without allowance for depletion and imputed interest because it is difficult to determine just what effect these factors would have upon the actual amount of copper which would be brought forth at a particular price.

TOTAL COST OF PRODUCTION IN THE UNITED STATES OF REFINED COPPER

(In cents per pound)

Item	1928	1929	1930	Average
Including depletion and interest:				
Mining	8.42	8.27	9.05	8.53
Concentration	2.08	2.01	2.29	2.11
Smelting	1.74	1.78	1.69	1.74
Refining	1.05	1.01	1.04	1.03
Total	13.29	13.07	14.07	13.41
Without depletion or interest:				
Mining	4.65	5.18	5.34	5.04
Concentration	1.92	1.85	2.07	1.93
Smelting	1.66	1.70	1.59	1.66
Refining	.99	.97	.93	.96
Total	9.22	9.70	9.93	9.59

Costs of individual copper producers show considerable variation; consequently it is profitable to produce a much larger quantity of copper when prices are high than when they are low. The following table shows the unit cost of refined copper in 1928 for four groups of producers for which cost data were obtained and also shows the approximate percent of total reported production accounted for by each group.

TOTAL UNIT COST OF REFINED COPPER IN THE UNITED STATES, 1928

Groups of producers	Percent of reported production accounted for by each group	Average cost per pound of copper recovered	
		Including depletion and interest	Without depletion or interest
		Cents	Cents
I	35	10.50	6.97
II	25	13.44	9.41
III	30	14.63	10.36
IV	10	17.56	12.40
	100(Average for all production)	13.35	9.26

Data similar to these are not available for recent years, but some information on the current level of costs is presented by the annual income statements of a number of large producers. These statements uniformly show a substantial net profit for 1936 when the price of copper averaged less than 10 cents per pound. Many of the companies are refiners and fabricators as well as primary producers and it is not possible, therefore, to ascertain the amount of their income from mining operations alone. In view of the importance of mining in their total activities, however, there is a strong presumption that most large companies could produce copper profitably at the prices prevailing in 1936. The Chairman of the Board of the American Smelting and Refining Company, (a corporation interested primarily in processing and fabricating and in mining in foreign countries) recently stated that about 500,000 tons of domestic copper could be produced at less than 5 cents a pound, another 400,000



tons at not more than 6 cents a pound and a further 100,000 tons at less than 8 cents a pound. Mine production in 1936 was only slightly over 600,000 tons which on this basis would mean a marginal cost of around 6 cents a pound and even with 1929 production the highest cost would not exceed 8 cents a pound. The difference between these figures and those published by the Tariff Commission are too great to be accounted for by changes in costs between 1929 and 1936 and illustrate the difficulty of arriving at a conclusion as to how much copper would be produced at a particular price.

Costs of production in foreign countries appear to be slightly lower than in the United States but the difference is not sufficiently large to make importing profitable, with or without a tariff. While labor costs are lower abroad, total costs in this country are reduced somewhat by the relatively high precious metal content of domestic ores. In the 1920's, to which the Tariff Commission figures showing lower foreign costs refer, the United States exported copper on a large scale.

#### Prospect for copper prices

It is reasonable to assume that with a substantially higher price at the present time than in 1936 production of copper will show a considerable increase in 1937. Many important concerns have already begun operations in plants which have been closed down for a number of years or have announced plans for expansion of activity. It is possible, however, that many of the re-opened or recently developed mines will not get into operation in large volume for some time to come.

It is reported in some quarters that during recent months there has been a considerable amount of physical stocking as well as forward buying of copper by consumers. Available records do not show any increase in consumers' stocks held at refineries, but it is possible that inventories have been accumulated in fabricators' warehouses, in which case the prospects for some further decline in prices in the near future would be strengthened. It seems probable that in the long run a copper price lower than that prevailing now would bring out a volume of production sufficient for domestic needs unless costs and the general price level increase considerably or unless the industry is able to agree upon an arbitrary restriction on production. The industry has not been successful in curtailing production in the past in periods of prosperity unless the curtailment last year with a  $9\frac{1}{2}$  cent price could be considered such. ~~As~~ Chart Ia shows that, despite the agreement, foreign output increased sharply in late 1936 when prices rose.

Reflecting a reduction in foreign speculative buying and the expectation that foreign production will increase substantially, the London price has declined from a high of about 18 cents per pound in the latter part of March to about 15 cents per pound in the second week of April. As in the domestic situation, there is some question whether output can be increased with sufficient rapidity to bring about a further reduction in copper prices in the next few months but in the long run it appears that productive facilities abroad are adequate to meet the demand for copper at a price lower than 15 cents per pound. The experience of the past two years, however, indicates that producers might be able to prevent any large decline in price. In fact, with stocks reduced, it is likely that the industry will be able to keep the price well above that of other recent years.



## WORLD SMELTER PRODUCTION OF COPPER

(Referred to country in which ore originated - American Bureau of Metal Statistics)

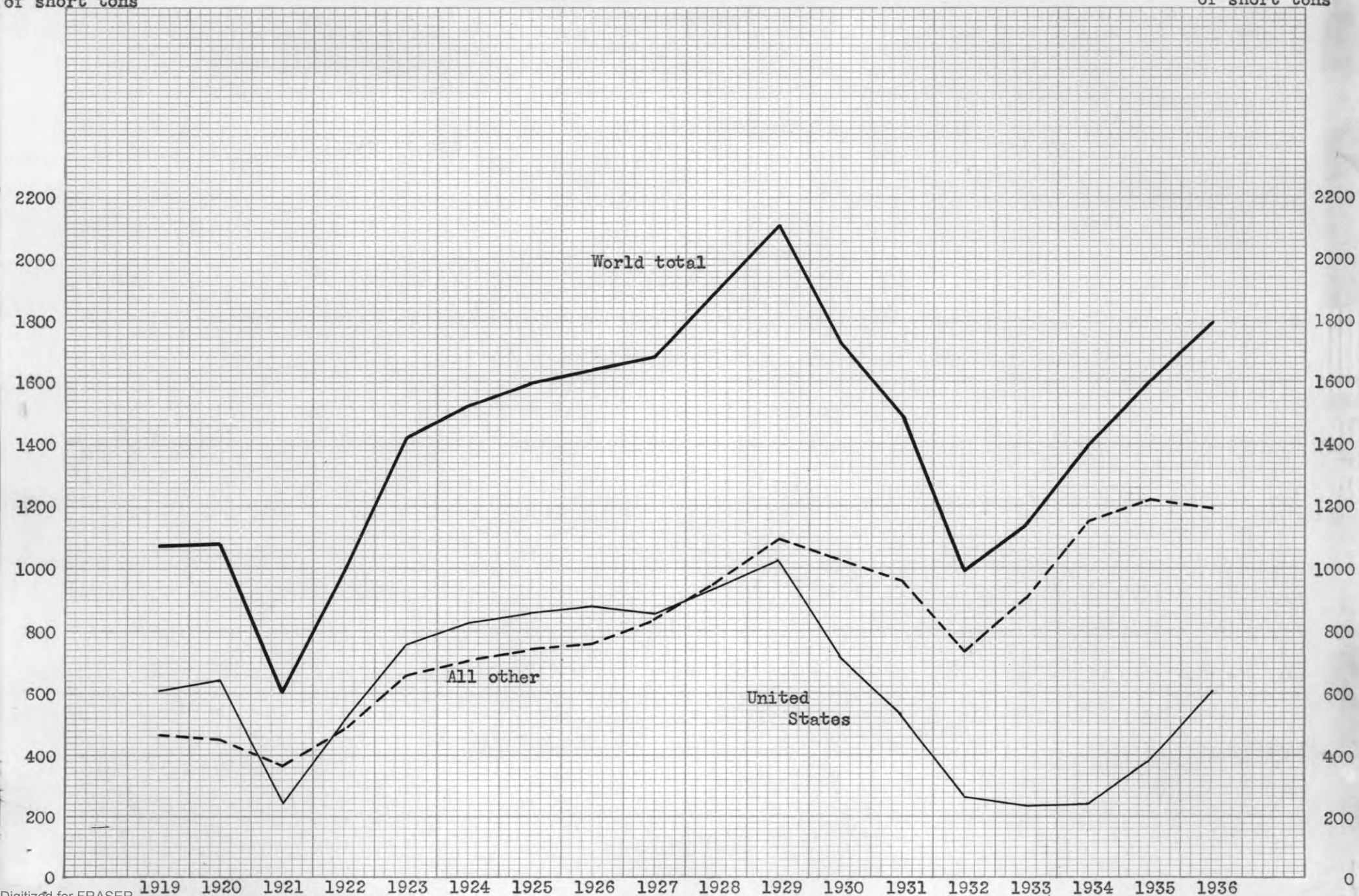
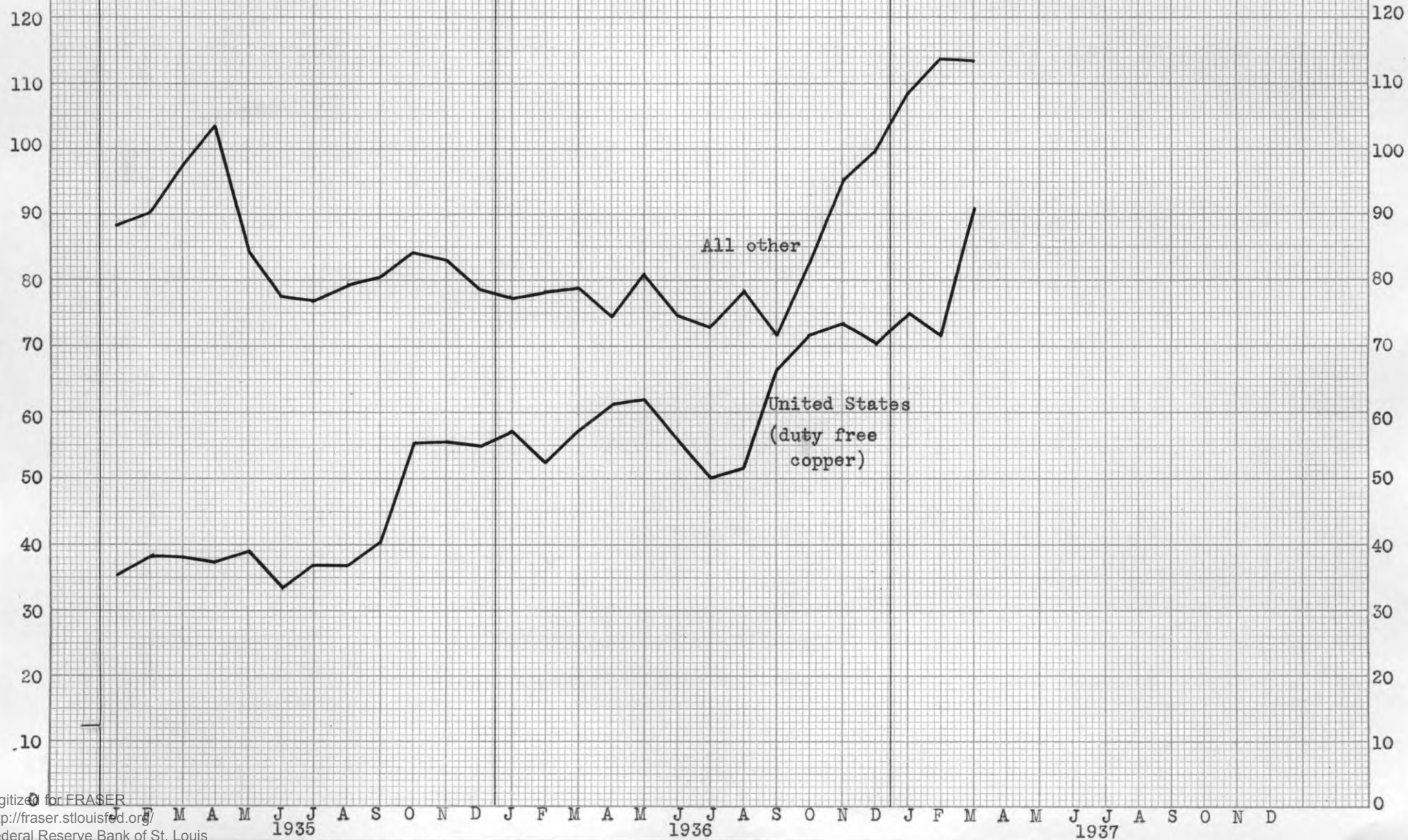
In thousands  
of short tonsIn thousands  
of short tons

CHART Ia



# SMELTER PRODUCTION OF COPPER -- UNITED STATES AND OTHER COUNTRIES (Copper Institute)

In thousands  
of short tons



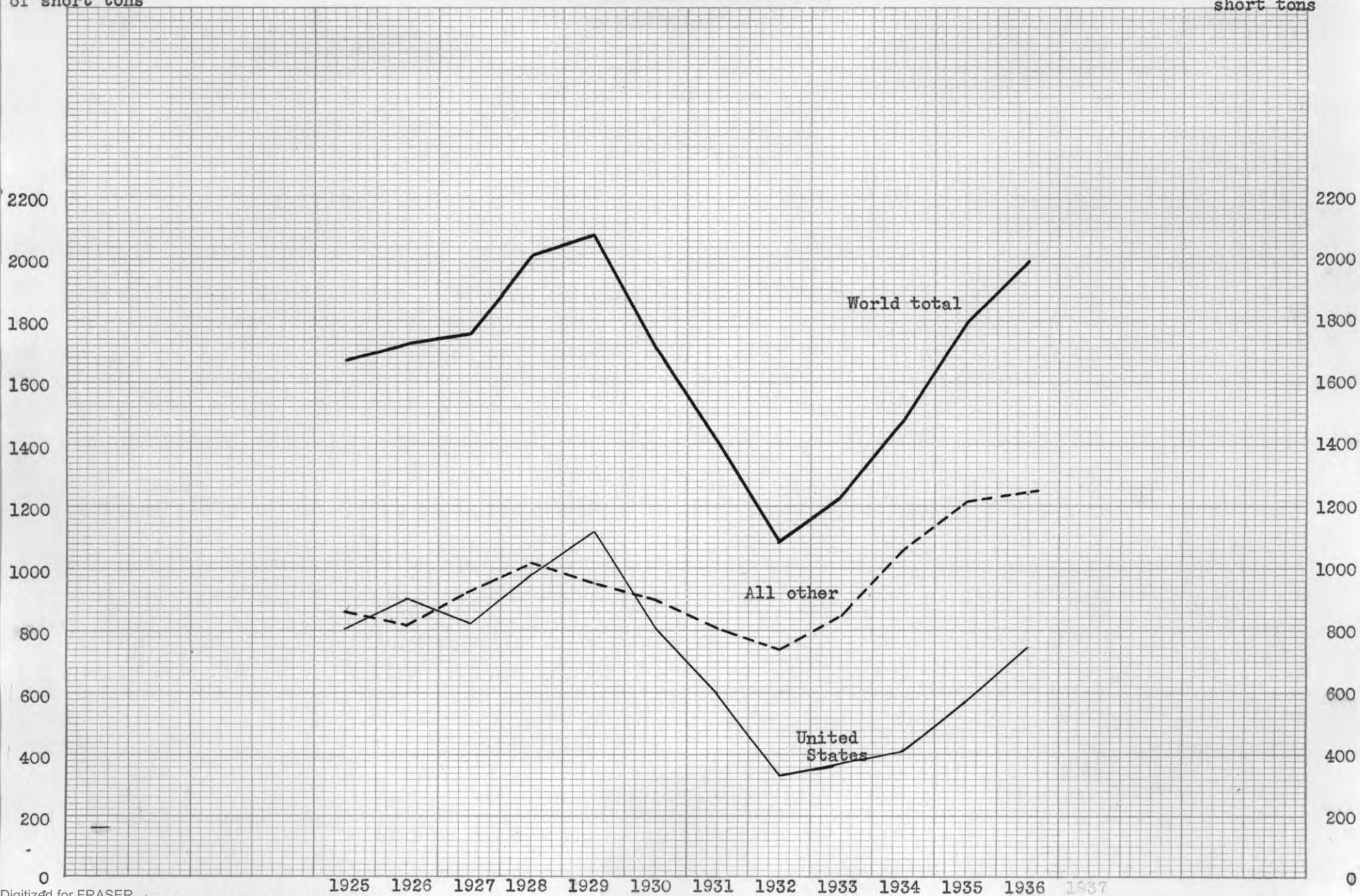




## CHART II

## WORLD CONSUMPTION OF COPPER

(American Bureau of Metal Statistics)

In thousands  
of short tonsIn thousands of  
short tons

## CHART III



# REFINERY PRODUCTION OF COPPER - UNITED STATES

(United States Bureau of Mines)

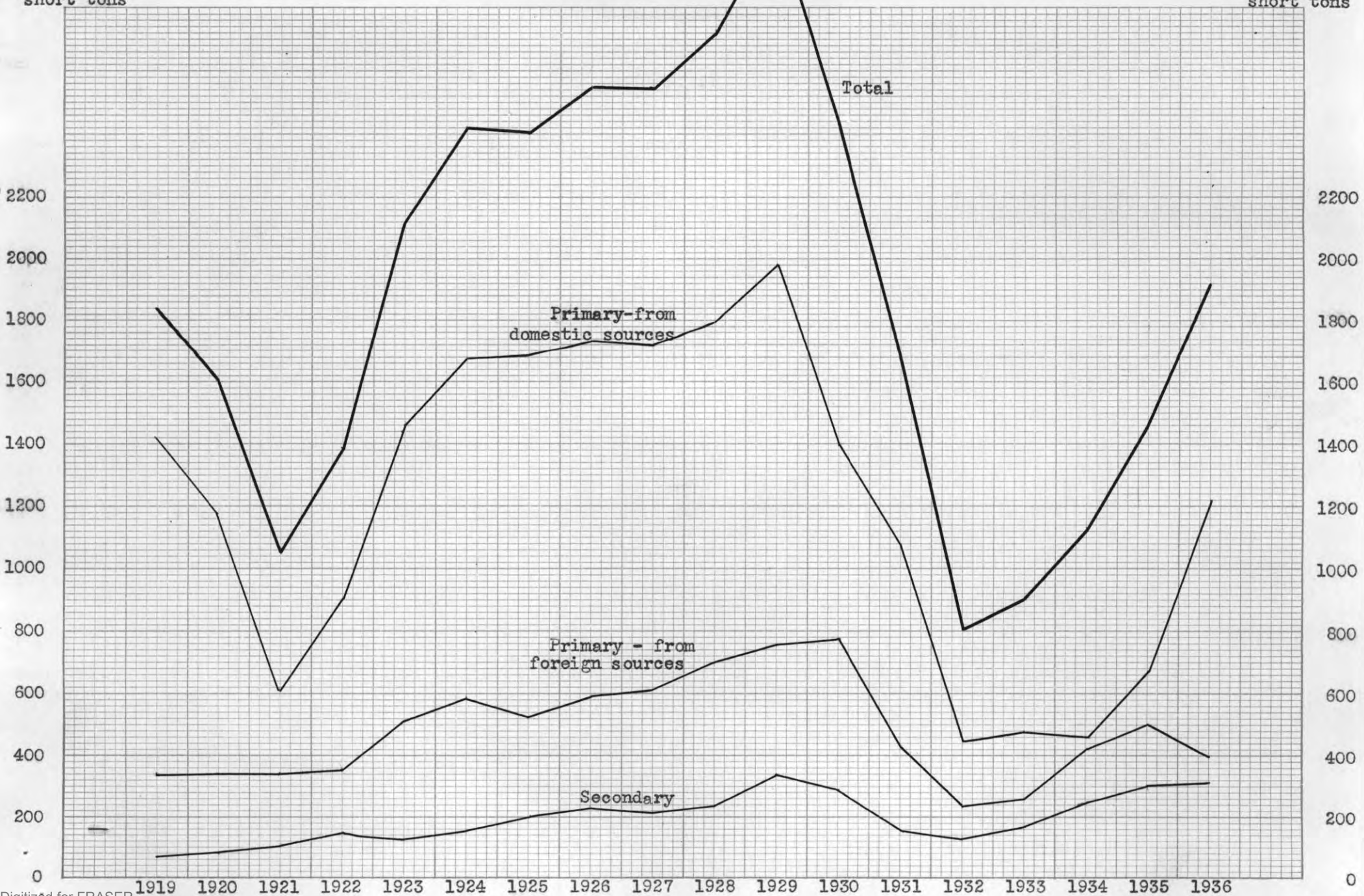
In thousands of  
short tonsIn thousands of  
short tons

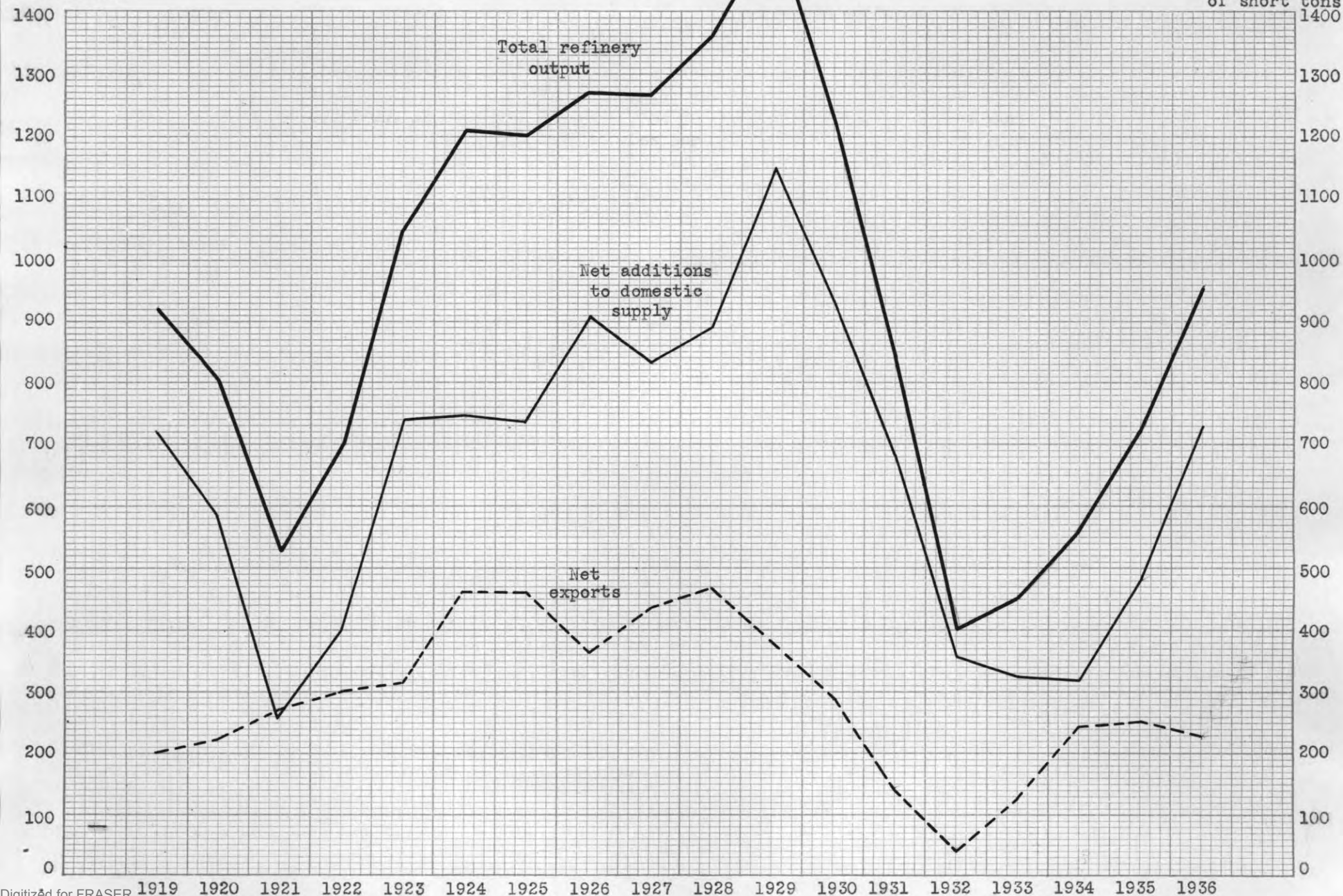




CHART IV  
PRODUCTION, NET EXPORTS, AND ADDITION TO DOMESTIC SUPPLY OF REFINED COPPER  
(United States Bureau of Mines)

In thousands  
of short tons

In thousands  
of short tons

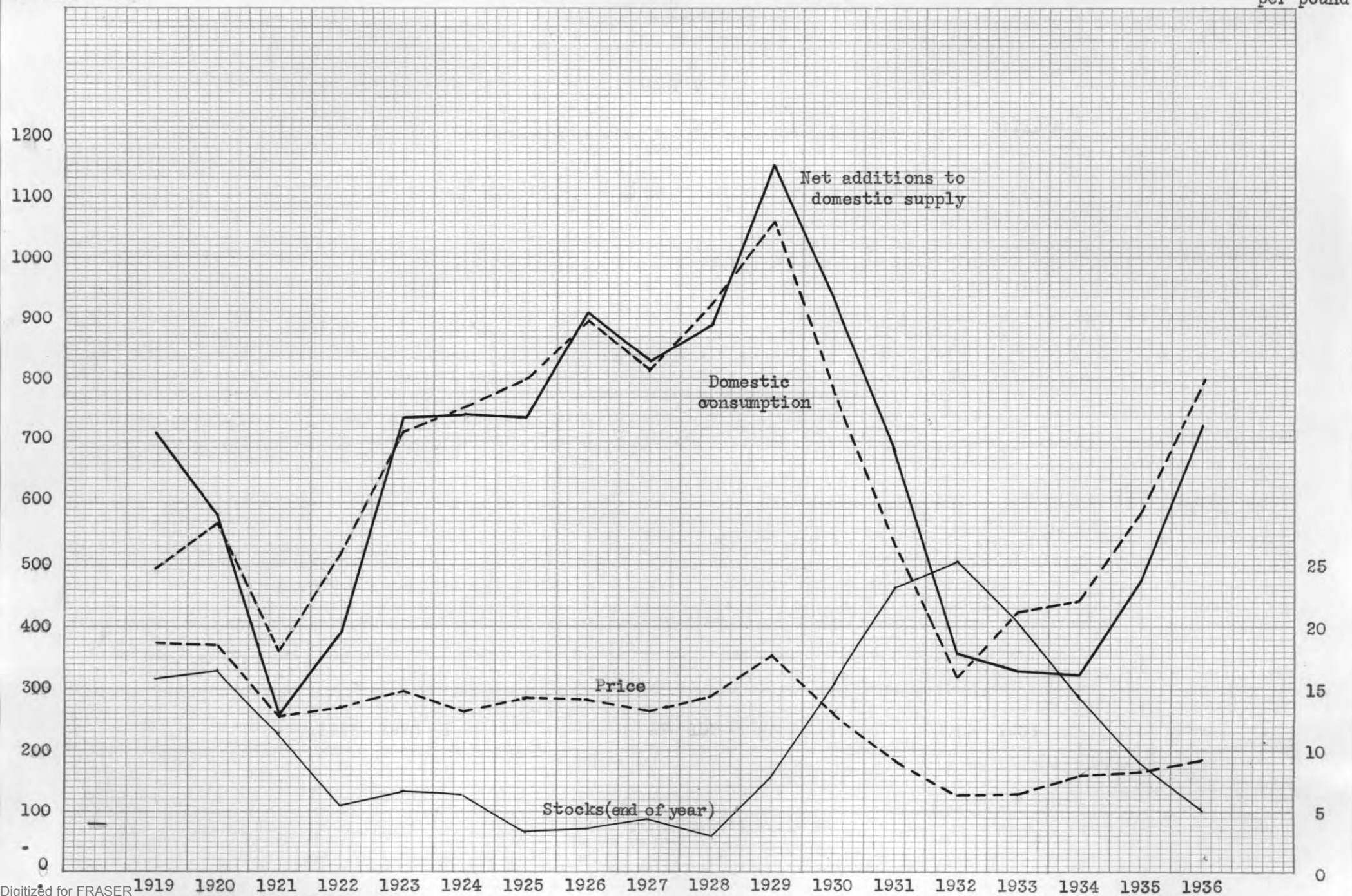




SUPPLY, CONSUMPTION, STOCKS, AND PRICE OF REFINED COPPER - UNITED STATES  
(United States Bureau of Mines)

In thousands  
of short tons

In cents  
per pound





In thousands °  
of short tons

CHART Va

SUPPLY, CONSUMPTION, STOCKS AND PRICE OF REFINED COPPER -- UNITED STATES  
(Copper Institute)In cents  
per pound