COPPER INDUSTRY

STATISTICS FOR 1965 COMPARED WITH OTHER YEARS

ARIZONA, UNITED STATES AND WORLD

COMPILED BY ARIZONA DEPARTMENT OF MINERAL RESOURCES

Fairgrounds, Phoenix, Arizona 85007

Frank P. Knight, Director

Frank J. Tuck, Statistical Consultant

Source: United States Bureau of Mines, Copper Institute, American Metal Market, Engineering & Mining Journal, Arizona Bureau of Mines.

August, 1966

Notes are for following year's report

CONTENTS

C O P P E R

PHYSICAL PROPERTIES *

Symbol - Cu. Atomic Weight - 63.54. Specific Gravity - 8.96

Melting Point - 1981.4°F. Boiling Point - 4700°F

Electrical Resistivity - Microhm-cm. - 1.673

Tensile Strength (H.D. - 60,000 #/sq. in.) (annealed - 30,000)

Crystal Structure - Face-centred cubic. Valence - 1 & 2

Copper ranks next to iron as a metal of commercial importance. It has the best conductivity of any base metal; for example, measured on the ordinary basis of conductivity per unit of cross sectional area, aluminum's conductivity is only 61 per cent of that of copper, but 3.5 times that of iron. Copper is therefore the most important metal in the electrical field. Copper has enough strength for minor structural purposes (such as sheet-metal work, electrical manufactures, etc.), is easily rolled and drawn into wire, has great resistance to weathering, and is of moderate cost compared to competitive materials, In addition to these properties, copper is widely used alloyed with zinc to form brass, which is easily worked, offers good resistance to weathering and most solutions (principal exceptions are certain acids and alkalies), and is fairly strong and elastic; and alloyed with tin to form bronze, of note for its resilience. It has good thermal conductivity, so finds many uses in heat-transfer units, such as cooling fins and water heaters. In addition, a large percentage of copper may be recovered as scrap after it has outlived the usefulness for which it was originally intended. Of the total copper consumed in the United States it has been estimated that about 60 per cent eventually returns to use as copper or copper alloys.

* U.S.B.M.'s "MATERIALS SURVEY" - September, 1952

Arizona Department of Mineral Resources August, 1966

COPPER INDUSTRY IN 1965

Source: Preparation of Story by F. L. Wideman,
Physical Scientist for U.S.B.M.
in August, 1966.

Copper continued in tight supply throughout the year despite an increase of 4 percent in free world mine production. The record production was attained in spite of strikes in Chile and elsewhere that resulted in the loss of an estimated 100,000 tons. Substantial quantities of copper released from the Government stockpile supplemented increased production in the United States. Supply, however, was inadequate to meet a record demand for the metal caused by unprecedented prosperity in the free world and military action in Viet Nam. Unabated demand exerted upward pressures on prices which were also influenced to a major extent by pressures from the Governments of Chile and Zambia. Prices on the London Metal Exchange and those charged by dealers in the United States fluctuated widely, reflecting the marginal supply situation and political and labor uncertainties. At yearend they were near record levels.

Consumption of refined copper as reported by consumers in the United States increased 10 percent over that of 1964 and reached a new alltime high. Consumption abroad, however, declined slightly from the previous year as a result of interruptions in supply that occurred outside the United States.

Stocks of refined copper at primary producers dropped sharply until the end of June, after which they turned up moderately. Inventories at yearend were the lowest since the close of 1959.

Exports of refined copper, the chief class, increased 3 percent over those of 1964, whereas general imports of major classes of unmanufactured dropped more than 10 percent.

LEGISLATION AND GOVERNMENT PROGRAMS

In January, Business and Defense Services Administration (BDSA) allocated 20,000 tons of copper released from the Defense Production Act inventory to 113 users of copper. The firms, if their applications were approved, would purchase copper from the Government at current market prices and include the usual differential applicable to different forms and shapes. A bill was signed by President Johnson on April 2 that authorized the release of 100,000 tons of copper from the national stockpile for the purpose of relieving domestic shortages with allocation based on demonstrated need and for domestic use only. On November 17, the Government announced a 4-point program to reduce inflationary pressures on the price of copper that might impair the defense effort in Viet Nam. The program called for release of 200,000 tons of copper from the national stockpile; control of exports of copper and copper scrap for an indefinite period to conserve domestic supply; legislation to suspend the 1.7-cent-a-pound import duty on copper to encourage a greater inflow of metal; and imposition of higher margin requirements on copper trading by directors of the Commodity Exchange Inc., New York,

to lessen speculation in the metal. The 200,000-ton-release was made up of 114,000 tons of fire-refined copper, 6,000 tons of lake ingot, and 80,000 tons of electrolytic cathode. It was not allocated as of December 31. Copper scrap export limits were put at 30,000 tons in 1966 to all countries except Canada. The scrap limit applied to the copper content of scrap containing more than 40 percent copper and was based on a company's recent trade volume. Copper scrap export control regulations were that half of any quantity of the scrap licensed for export that was not moved as of December 1 would not be allowed to leave the country. That was to hold through February 28, 1966. Scrap that was not loaded on an exporting carrier by February 28 would be automatically cancelled. Copper exports other than scrap were not limited.

BDSA amended schedule A to its Order M11A Set-Aside percentages in July with August 16 as effective date. The amendment applied to authorized controlled material orders calling for delivery after September 30 and provided for a new base period (calendar year 1964) for the determination of average shipments against which set-aside percentages would be applied. Some percentages were trimmed back to compensate for the large increase in production in 1964 over the previous base year, 1960.

Production of three-layered 25-cent coins began at the Philadelphia Mint late in August and the new quarters went into circulation on November 1. Late in the year, minting three-layered 10-cent coins began and on December 30, production of the new half dollar began at the Denver Mint. The new dimes and half dollars will be in circulation early in 1966. The new quarters and dimes have faces of cupro-nickel (75 percent copper and 25 percent nickel) bonded to a core of pure copper. The outer faces of the new half dollars are an alloy of 80 percent silver and 20 percent copper. The inner core is 21 percent silver and 79 percent copper.

The Supreme Court upheld the 1964 ruling of the U. S. District Court for the Southern District of New York that the acquisition of the Okonite Company in 1958 by Kennecott Copper Corp. was in violation of Section 7 of the Clayton Antitrust Act. Divesture proceedings were begun.

A settlement by agreement of the Government's civil antitrust suite of 1962 against Newmont Mining Co. was pending at the end of 1965. The suit challenged Newmont's stockholdings in Magma Copper Co., Phelps Dodge Corp., and various common directorships with these companies. Newmont plans to divest itself of its Phelps Dodge holdings within 3 years and shall not acquire any Phelps Dodge stock within 10 years nor have any director or officer in common with that company. Newmont's interest in Magma remains unchanged.

DOMESTIC PRODUCTION

PRIMARY COPPER

Mine Production. - The copper mining industry in the United States was essentially free from interruptions which, together with expansion of producing facilities, resulted in an alltime record output. The Mineral Park mine of Duval Corp. experienced its first year of full production. Late in the year, The Eagle-Picher Co. began open cast mining of a thin bed of shale occurring in the Permian Red Beds in southwestern Oklahoma. In September, the Anaconda Company began stripping about 600 feet of waste material from a low-grade copper deposit in the Twin Buttes area, Ariz. Expansion of the capacity of several mines and concentrators was completed or in progress during the year.

The search for new deposits of copper was intense and exploration activities were conducted in all major producing areas, as well as in others not noted for production.

Arizona supplied 52 percent (55 percent in 1964) of the total U. S. output and continued to lead all States by a large margin. Utah ranked second among the major copper producing States; output increased 30 percent over that of 1964 as a result of uninterrupted and expanded production by Utah Copper Division, Kennecott Copper Corp. The State's share of the total output was 19 percent (16 percent in 1964).

Output from Montana, which was in third place, increased 11 percent as a result of a continuing expansion program of The Anaconda Company. Production in New Mexico rose 15 percent, principally as a result of uninterrupted operations of the Chino Mines Division, Kennecott Copper Corp. The State was in fourth place and produced 7 percent of the Nation's total. Although production from the Liberty Pit of Nevada Mines Division, Kennecott Copper Corp., continued to be adversely affected by slides that occurred early in 1964, output from the mine increased somewhat. A slight increase in copper output from the Yerington pit of The Anaconda Company assisted in placing Nevada in fifth place. Michigan ranked sixth in mine production. In September, White Pine Copper Co. poured its billionth pound of copper, approximately 11 years after the company was formed. Output from Tennessee and Pennsylvania, seventh and eighth ranking States, increased 7 percent and 20 percent, respectively.

Classification of production by methods showed that approximately 73 percent of the recoverable copper and 78 percent of the copper ore came from open pits. Copper produced by precipitation from mine water and leach solutions was 10 percent of the mine production in 1965.

COMMENTS ON COPPER OUTLOOK BY THE U. S. INDUSTRY'S COPPER PRODUCERS

Charles M. Brinckerhoff, Anaconda Board Chairman

Anaconda's board chairman believes Free World copper production will increase five percent per year over the next six years. He says that copper plants are being expanded for greater production as well as for the treatment of still lower grade reserves.

Mr. Brinckerhoff said Anaconda Co. has increased its world-wide production from 315,000 tons in 1952 to 584,000 tons in 1964, with the company's new program calling for further expansion. Between now and 1970, he told the Society of Mining Engineers, "we expect to increase our annual copper producing capacity by an additional 316,000 at a cost of $300 million. This is to be done through the development of new mines, the expansion of existing operations and through improved methods of treatment, and should bring Anaconda's productive capacity to 900,000 tons yearly."

The Anaconda executive said that a broad viewpoint now exists regarding the economic guidelines for the copper ore deposit of the future. "Today," he said, "geologists find quick approvals for drilling programs that thirty years ago would not have received even slight consideration at the home office."

Frank R. Milliken, President of Kennecott Copper Corp.

Abstract from Milliken's Report to the Stockholders, Jan. 28, 1966

"The current copper situation is in many ways reminiscent of that in 1955 and 1956 when copper also was in tight supply. However, there is one important difference. In 1955 and 1956, most producers selling in Europe used the London Metal Exchange quotation for pricing their sales. In 1956 the LME price, and therefore our European price, reached 54.6 cents a pound.

"Early in 1964 when LME prices started to advance rapidly, many primary producers ceased using the LME as a pricing basis for sales in Europe. We followed this action. As a result, in the face of LME prices that have recently reached as high as 87 cents, our European price is, as noted, 42 cents.

"The answer to the tight copper market is increased production. Kennecott's copper productive capacity will be increased by 121,000 tons per year upon completion of the Utah and Chino (New Mexico) expansion programs.

"Plans for substantial increases in copper production capacity throughout the world have been announced. When they materialize, the supply-demand relationship for the metal should be brought into better balance.

"The greatest potential for expanded copper production is in Africa and South America. The copper output of these two continents is around 2,000,000 tons a year, mainly from Zambia, Congo, Chile, and Peru. Ores are relatively high grade and unit production costs are correspondingly low. Under favorable circumstances, production from these countries probably could be doubled. Active exploration for new copper deposits is also being conducted in Australia, Canada and the United States.

"There are known low grade copper deposits in the United States and elsewhere which with presently known technologies cannot be brought into profitable production at current primary price levels.

"Practically all economic forecasters predict that the year 1966 will continue to be one of high industrial activity. Unless some unforseen downturn in the economy occurs, the demand for copper should remain strong."

Robert G. Page, President Phelps Dodge Corp.

Abstract from President's Report to Shareholders

Pointing to the disparity between the current domestic copper producers' price of 36 cents a pound insisted upon by the Government, and the foreign producers' price of 42 cents, the report predicted that this would tend to aggravate the shortage in the United States this year.

"All indications," Mr. Page said, "point to continued high demand for copper and copper products in 1966, with consumer spending continuing to rise, a further increase in business outlays for plant and equipment, and greater military requirements growing out of the war in Vietnam. Under these circumstances, copper is likely to remain in tight supply for some time to come."

The release of additional copper from the government stockpile last December moderated to some extent the tight supply situation prevailing in this country the early part of this year, the report stated. "An interesting sidelight on this sale," the report continued, "is that, because of shipping and treatment charges, copper from the stockpile is costing consumers something between 36½ and 38 cents a pound, in spite of the government's insistence that the producers' price be kept down to 36 cents."

What the government's increased role in the copper market will achieve remains to be seen, the report concludes. "It is already quite clear, however, that government intervention in the market place, once begun, tends inevitably to be extended, and that normal operation of economic forces, which would tend to restore a balance between supply and demand, becomes ever more narrowly restricted," the report said.

James Boyd, President of Copper Range Co.

Abstract from Boyd's Speech at Annual Meeting of Copper Development Association Meeting, Reviewed in Mining Engineering for July, 1966

Boyd stated his conviction that free world copper production is now so widespread that disruptions in individual geographic areas will tend to be ironed out. He said that he expected the annual copper capacity of the free world to increase by 1.94 million short tons by 1970. Taking an optimistic view in the face of present copper shortages, he commented that "Because of the current difficulty in obtaining all of the copper each of us would like to have, and the dreadful confusion over price, we forget that supply and demand is now probably much closer than we are inclined to believe. We must guard against the tendency to hysteria when either supply or demand gets out of kilter," he warned. Appraising future sources of copper, Dr. Boyd expressed the opinion that "Of the total anticipated increase in free world mine capacity through 1970-1971, over 1.05 million tons, or more than 55% will originate from new mines in the United States, Canada, Puerto Rico, Chile, Peru and Zambia.

C. J. Parkinson, President Anaconda Copper Co.

Abstract from Parkinson's Speech at Copper Development Assoc.'s Annual Meeting, Reviewed in Mining Engineering, July, 1966

President C. Jay Parkinson analysed the caused of the present crisis. Laying part of the blame for the copper price disorder on the Federal doorstep, Mr. Parkinson said, "If the U. S. Government had permitted the price of copper to seek its normal level it's our belief that considerable speculative activity would have been eliminated or diminished, some additional copper from segments of existing mines could have been brought to market and some additional copper would have been

imported into this country." Mr. Parkinson was alluding to what he called the "rollback by persuasion" last November, when the Government succeeded in its effort to erase a primary price increase of 2 cents a pound for domestic copper. While the primary price is being held at 36 cents a pound in the United States, Mr. Parkinson continued, "Governments of developing countries like Chile, Zambia and the Congo are seeking to push prices beyond prudent limits and thereby increase their supply of hard money." "Consequently, said Mr. Parkingson, "private copper producers no longer control the price of their own products."

Mr. Parkinson had more to say on the copper situation when he addressed the Rotary Club in Butte, Montana, the day after the Anaconda meeting. He informed the Rotarians that "at this moment, the price for copper mined from Butte ore is 36 cents a pound, the price for No. 1 Copper scrap is over 50 cents a pound, and foreign prices range from 42 cents to 85 cents a pound. To anyone who has lived in mining camps," he said, "these conditions can be summarized by one word - "Boom."

However, Mr. Parkinson warned, if copper producers are to enjoy continuing prosperity, they must insure that their product will be available in ample supply at reasonably stable prices.

"The longer copper prices remain as volatile as they are today," said Mr. Parkinson, "the greater the threat of substitute materials. Indeed, 'boom' could mean 'doom' if substitution trends already under way should become more widespread."

"The Role of the Mining Industry in the Development of Independent Africa"

Brief abstract of Sir Ronald L. Prain's speech on April 28, 1966 to the New York Section of the American Institute of Mining, Metallurgical and Petroleum Engineers, Printed in full in Mining Magazine, London, June, 1966.

To those interested, it would be well worth while to refer to the whole speech published in the Mining Magazine.

"Let us start first with a brief analysis of the need for more mines.

"A conservative projection of world population growth indicates that by the close of this century the population will be 6,300 million, of which 4,800 million is expected to be in the developing countries. This increase, but perhaps even more so the improvement in living standards which is expected to occur, will mean increase in the demand for metals. In the case of copper few estimates at present put the world demand for primary copper in that year, including the Soviet sector, at less than 20 million tons. You will notice that these are demand estimates and not production estimates, and may clearly need some revision in the case of copper. There are two factors which could affect such estimates, one being the question of whether new discoveries will develop the reserves which would be necessary to meet such a demand, and the other factor concerns the question of whether copper will keep its present uses or develop new ones to replace those which are lost. In other words, for copper it is the old problem of finding a price mechanism which lead to price conditions which on the one hand will not kill the consumption, nor on the other hand inhibit the development of production from low grade ores.

"When we examine the copper reserves, we find that more than 50 percent of the known reserves are in developing countries, and if we narrow these figures down to Africa, we see that over 20 percent of known reserves of copper are in that continent.

"One of the difficulties, and a positive discouragement to investment in the developing countries, is the risk of expropriation without proper compensation or of lesser political hazards. Unfortunately, many of the developing countries incline to out-of-date socialist theories that are wholly irrelevant to the rate of economic growth that is being achieved by the so-called capitalist countries with their free enterprise techniques. Indeed, one might go further and say that only highly industrialized nations can afford the luxury of State enterprise."

"The first consideration of a mining investment is, of course, to decide whether it has an orebody or merely some mineralised rock. In Africa and other developing countries, the almost inevitable isolation of mineral deposits introduces not only technical considerations but also a complex of economic and social considerations into this decision.

"If I may quote from my own experience, the beginnings of the development of the Copperbelt of Zambia now lie almost 40 years behind us, but the problems of new developments today are essentially scarcely less, and the Copperbelt provides a practical example of them.

"There was first of all the act of faith which backed, with an extremely expensive drilling program, the geological hunch (it was scarcely more) that extensive copper sulphide deposits underlay the small surface outcrops which had weathered into then uneconomic oxides. It was our good fortune not merely to prove these very large deposits, but to find them within reasonable distance of the country's only rail link with the outside world. In other countries there may not be such a road. This leaves to the developing company the provision of such essentials as transport, power, water, housing, sanitation, schools, hospitals and recreational facilities. In the case of the Copperbelt all these developments were threatened by the prevalence of malaria; an eradication scheme on a large scale was essential, and was fortunately a brilliant pioneer success.

"The establishment of communication with the outside world was not as difficult in Zambia as it might be elsewhere, but it still left us several thousand miles from our markets which were also the source of supply of the machinery and goods we needed for our operations. The financing of long pipelines and the cost of essential imports along the same route are important factors in the decision to mine. One might add that the early development of the Copperbelt was achieved during the Depression for a few million pounds: to capitalize the same venture today would cost perhaps $1,500 million."

COMMENTS ON TABLES XII AND XIV

A study of United States copper production and consumption figures (Table XII), by years from 1946 to 1955 inclusive, and years 1956 to 1965 inclusive, brings out some pertinent statistics. The small increase in domestic consumption of refined copper is especially notable.

The average annual domestic consumption from 1946 to 1955 inclusive (10 years) was 1,377,255 tons, and from 1956 to 1965 inclusive (10 years) it was 1,556,949 tons, an increase of only 13.05 percent for the 10 years, or only 1.31 percent increase per year, when one might expect a normal growth-rate of at least 2 or 3 percent per year. The growth-rate in production of refined copper for the two ten-year periods was 3.2 percent per year.

Production of refined copper in the second period (1956 to 1965) averaged 92.1 percent of U. S. consumption, as compared with an average of only 78.9 percent in the first period (1946-1955). Such capacity should permit economical operation for most of the big producers at an 85 to 90 percent of capacity during a recession or lull in demand.

Meanwhile, a copper tariff high enough to bar out low-cost foreign copper should always be kept in mind, as from now on domestic copper will be mostly high-cost due chiefly to lowering grades of ore and rapidly increasing costs. The new producers, which have brought about this new productive capacity, must be kept active, not only for security reasons but for employment stability in a very important industry in our economy.

A study of Table XIV shows that during the last 3 years it took an annual average of 63,319,152 man-hours of U. S. labor at $3.027 per hour to produce 158,312,067 tons of copper ore, with a recovery of 2,392,504,000 pounds of equivalent copper; a labor cost of $191,872,800 for copper mining, or $0.0802 per pound of copper.

With foreign ores assaying more than twice the grade of U. S. ores and foreign labor averaging less than half the U. S. wage-rate, it is easy to calculate a foreign copper mining labor cost of less than half the U. S. labor cost of producing a pound of copper. As the object of a copper tariff primarily is to equate the difference in wage cost per pound of copper, such a tariff should be at least double the presently suspended tariff of 1.7 cents per pound of copper.

In order to insure continuous production of the number one strategic metal the domestic copper industry must be protected against a flood of low-cost foreign metal. Our foreign aid program has helped the foreign producer to develop his copper production techniques, and he can find a ready market for his product in a rapidly expanding economy throughout the world. The growth-rate of copper consumption throughout Europe has been truly amazing. According to the Copper Institute figures for deliveries of refined copper outside the U.S.A., the average annual consumption for the 10-year period (1946-1955) was slightly less than one million tons per year, and for the 10-year period (1956-1965) it was over two million tons per year.

TABLE I

SALIENT U. S. COPPER STATISTICS

YEARS 1963, 1964 and 1965

Compiled By Arizona Department of Mineral Resources from U.S.B.M. Reports

	1963	1964	1965
Arizona Mine Production - Tons Copper . . .	660,977	690,988	703,377
U. S. Mine Production - Tons Copper . . .	1,213,166	1,246,780	1,351,734
World Mine Production - Tons Copper . . .	5,220,000	5,340,000	P 5,600,000
Refined Stocks - Beginning of Period . . .	71,000	52,000	37,000
Refined Stocks - End of Period . . .	52,000	37,000	35,000
Refinery Production (From Domestic Ores) . .	1,219,342	1,259,852	1,335,660
Refinery Production (From Foreign Ores) . .	377,009	396,543	376,133
Secondary Copper Recovered from Scrap as Unalloyed Copper . . .	314,643	366,197	462,811
IMPORTS:			
Copper from Ore, Matte, Regulus . . .	49,128	52,012	36,919
Blister Copper . . .	368,985	389,577	332,558
Refined Copper . . .	118,447	137,707	137,406
Total Imports - Crude & Refined . . .	536,560	579,296	506,883
EXPORTS:			
Copper in Ores, etc. . . .	1,210	5,415	15,536
Refined Copper . . .	311,477	316,230	324,962
Total Exports - Crude & Refined . . .	312,687	321,645	340,498
EXCESS IMPORTS OVER EXPORTS . . .	223,873	257,651	166,385
CONSUMPTION:			
New Refined (Apparent Consumption) . . .	1,423,000	1,493,000	1,526,000
Total Refined (Actual) . . .	1,744,273	1,825,281	2,004,623
U. S. Mine Prod. % of Appar. Consumption.	85.3	83.5	88.6
Average E & M J Price of Copper . . .	30.600¢	31.960¢	35.017¢

P - Preliminary

Arizona Department of Mineral Resources August, 1966

TABLE II

MINE PRODUCTION OF RECOVERABLE COPPER IN THE UNITED STATES

1963 - 1965, BY STATES, IN SHORT TONS

STATE	1963	1964	1965	RANK
Alaska		11	32	
Arizona	660,977	690,988	703,377	(1)
California	916	1,035	1,165	
Colorado	4,169	4,653	3,828	
Idaho	4,172	4,666	5,140	
Michigan	75,262	69,040	71,749	(5)
Missouri	1,816	2,059	2,331	
Montana	79,762	103,806	115,489	(3)
Nevada	81,738	67,272	71,332	(6)
New Mexico	83,037	86,104	98,658	(4)
Oregon	1/	15	- - -	
Pennsylvania . . .	4,434	3,614	4,354	
South Dakota . . .	1	- - -	- - -	
Tennessee.	13,717	13,889	14,823	
Utah	203,095	199,588	259,138	(2)
Washington 2/. . .	70	35	30	
Wyoming	- - -	5	6	
Other States . . .			282	
TOTAL	1,213,166	1,246,780	1,351,734	

1/ Included with Washington for 1963 to avoid disclosing operations of individual companies.

2/ Includes North Carolina and Oregon for 1963 to avoid disclosing operations of individual companies.

Arizona Department of Mineral Resources August, 1966

TABLE III

ARIZONA, UNITED STATES, AND WORLD MINE PRODUCTION OF COPPER, In Short Tons

E. & M. J. DOMESTIC PRICE OF COPPER
By Years 1912 -1965 Incl.

Source: U. S. Geological Survey: Mineral Resources; U.S.B.M. Minerals Yearbooks

	ARIZONA			UNITED STATES		WORLD	E.&M.J.
Year	Tons	% of U. S. Prod.	% of World Prod.	Tons	% of World Prod.	Tons	Price Per Pound
Beginning of Records 1874 thru 1911	- 1,759,221						
1912	182,519	29.2	16.2	624,547	55.5	1,125,656	16.341¢
1913	203,962	33.0	18.6	617,755	56.2	1,099,366	15.269
1914 1/	196,509	34.2	19.0	574,216	55.5	1,034,487	13.602
1915 1/	229,986	30.9	19.6	744,036	63.4	1,173,150	17.275
1916 1/	360,917	36.0	23.2	1,002,938	64.6	1,553,498	27.202
1917 1/	356,083	37.6	22.2	947,717	59.1	1,602,914	27.180
1918 1/	382,428	40.0	24.2	955,011	60.5	1,579,246	24.628
1919	269,050	44.4	24.6	606,167	55.3	1,095,697	18.691
1920	279,128	45.6	26.4	612,275	58.0	1,056,014	17.456
1921 2/	92,517	39.7	15.1	233,095	38.0	613,987	12.502
1912-1921	2,553,099	36.9	21.4	6,917,757	58.0	11,934,015	20.497¢
1922	200,022	41.5	21.4	482,292	48.2	935,374	13.382¢
1923	309,464	41.9	22.8	738,870	54.5	1,355,327	14.421
1924	338,876	42.2	23.0	803,083	54.5	1,472,712	13.024
1925	356,678	42.5	22.6	839,059	53.2	1,576,998	14.042
1926	361,648	41.9	22.7	862,638	54.0	1,596,147	13.795
1927	341,095	41.3	20.5	824,980	49.5	1,666,694	12.920
1928	366,138	40.5	19.2	904,898	47.5	1,903,672	14.570
1929	415,314	41.6	19.3	997,555	46.4	2,150,587	18.107
1930 3/	288,095	40.9	16.2	705,074	39.7	1,775,805	12.982
1931 3/	200,672	37.9	13.0	528,875	34.2	1,545,425	8.116
1922 to 1931	3,178,002	41.3	19.8	7,687,324	48.1	15,978,741	13.867¢

(Continued)

TABLE III (Continued)

	ARIZONA			UNITED STATES		WORLD	E.&M.J.
Year	Tons	% of U. S. Prod.	% of World Prod.	Tons	% of World Prod.	Tons	Price Per Pound
1932 3/	91,246	33.3	8.0	238,111	20.9	1,138,676	5.555¢
1933 3/	57,021	29.9	4.9	190,643	16.4	1,159,000	7.025
1934 3/	89,041	37.5	6.3	237,401	16.8	1,415,353	8.428
1935 3/	139,015	36.0	8.4	336,491	23.5	1,647,939	8.649
1936 3/	211,275	34.4	11.1	614,516	32.4	1,899,263	9.474
1937	288,475	34.3	11.2	841,998	32.8	2,567,916	13.167
1938 4/	210,797	37.8	9.3	557.763	24.5	2,274,045	10.000
1939 5/	262,117	36.0	10.6	728,320	29.4	2,481,277	10.965
1940 5/	281,169	32.0	10.5	878,086	32.7	2,688,510	11.296
1941 5/	326,317	34.1	11.2	958,149	33.0	2,903,458	11.797
1932 to 1941	1,956,473	34.7	9.7	5,631,478	27.9	20,175,437	10.566¢
1942 5/	393,387	36.4	12.9	1,080,061	35.5	3,039,041	11.775¢
1943 5/	403,181	37.0	13.2	1,090,818	35.6	3,064,394	11.775
1944 5/	358,303	36.8	12.5	972,549	33.9	2,866,000	11.775
1945	287,203	37.2	12.0	772,894	32.2	2,400,000	11.775
1946	289,223	47.5	14.1	608,737	29.6	2,056,000	13.820
1947	366,218	43.2	14.6	847,563	33.9	2,500,000	20.958
1948 6/	375,121	44.9	14.4	834,813	32.1	2,600,000	22.038
1949 6/	359,010	47.7	14.4	752,750	30.1	2,500,000	19.202
1950	403,301	44.4	14.4	909,343	32.5	2,760,000	21.235
1951	415,870	44.8	14.3	928,330	32.0	2,900,000	24.200
1942 to 1951	3,650,817	41.5	13.7	8,797,858	33.0	26,685,435	16,699¢

(Continued)

TABLE III (Continued)

YEAR	ARIZONA Tons	ARIZONA % of U. S. Prod.	ARIZONA % of World Prod.	UNITED STATES Tons	UNITED STATES % of World Prod.	WORLD Tons	E.&M.J. Price Per Pound
1952	395,719	42.8	13.1	925,359	30.6	3,020,000	24.200¢
1953	393,525	42.5	12.9	926,448	30.4	3,050,000	28.798
1954 7/	377,927	45.2	12.2	835,472	27.0	3,100,000	29.694
1955	454,105	45.5	13.3	998,570	29.2	3,420,000	37.491
1956	505,908	45.7	13.4	1,104,156	29.1	3,790,000	41.818
1957	515,854	47.5	13.3	1,086,141	27.9	3,890,000	29.576
1958	485,839	49.6	12.9	979,329	25.9	3,780,000	25.764
1959	430,297	52.2	10.7	824,846	20.5	4,020,000	31.182
1960	538,605	49.9	11.7	1,080,169	23.5	4,590,000	32.053
1961	587,053	50.4	12.1	1,165,155	24.0	4,850,000	29.921
1952 to 1961	4,684,832	47.2	12.5	9,925,645	26.5	37,510,000	31.238¢
1962	644,242	52.4	12.7	1,228,421	24.1	5,090,000	30.600¢
1963	660,977	54.5	12.7	1,213,166	23.3	5,210,000	30.600
1964	690,988	55.4	12.9	1,246,780	23.3	5,340,000	31.960
1965	703,377 8/	52.0	12.6	1,351,734 9/	24.1	5,600,000 10/	35.017
1962 to 1965	2,699,584	53.6	12.7	5,040,101	23.7	21,240,000	32.121¢
1874 to 1965	ARIZONA ONLY 20,482,028 Tons at 21.547¢ per pound = $8,826,411,000						

NOTES: 1/ World War I 1914 - 1918.

2/ Post World War 1 Recession. Lasted about one year.

3/ Depression began in 1930; was at its worst in 1933; gradually improved till 1937.

4/ Recession in 1938. Recovery in 1939 caused by War demand.

5/ World War II began in 1939; copper consumption reached its height in 1944.

6/ In the year 1948 and the early months of 1949, copper was being produced in the United States at the rate of 68,000 short tons per month, imports were at the rate of 18,000 tons of blister copper and 22,000 tons of refined copper, and exports were at the rate of 12,000 tons per month. The price of copper averaged 22.5 cts. during this period, varying from 21 3/8 to 23 3/8 cts.

In March 1949 the copper import tax was suspended, and during the months following the suspension, domestic demand fell drastically, and for four months net domestic consumption of copper was at or below the level of domestic production, even though the latter was severely curtailed. During this period, imports continued at practically the same rate. The price of copper dropped from 23 3/8 cts. to 16 ½ cts. per pound. Many mines were forced to close down, and the large low-cost producers curtailed production. The average monthly production dropped from a high of 78,000 to a low of 56,000 tons.

7/ Curtailment early in the year, and a series of strikes in August and September caused a loss in production of over 100,000 tons. Reduced consumption in the U. S. was offset by an appreciable rise in the use of copper outside of this country, chiefly Europe. Result: a short supply of copper at the end of the year.

8/ Highest annual production in history of Arizona.

9/ Highest annual production in history of United States.

10/ Highest annual production in history of the World.

TABLE IV

MINE PRODUCTION RECOVERABLE COPPER - PRODUCTION SECONDARY UNALLOYED COPPER
REPORTED REFINED COPPER CONSUMPTION IN U.S.A.
ESTIMATED WORLD REFINED COPPER CONSUMPTION

	MINE PRODUCTION RECOVERABLE 1/				SECONDARY COPPER PRODUCTION		
Year	United States	Rest of Free World	Communist Controlled	TOTAL WORLD	United States 1/	Rest of World 2/	TOTAL WORLD 2/
1954	835,472	1,749,000	416,000	3,100,000	212,000	400,000	612,000
1955	998,570	1,955,000	451,000	3,405,000	247,000	595,000	842,000
1956	1,104,156	2,171,000	515,000	3,790,000	273,000	537,000	810,000
1957	1,086,859	2,259,000	544,000	3,890,000	248,000	547,000	795,000
1958	979,329	2,217,000	584,000	3,780,000	255,000	525,000	780,000
1959	824,846	2,590,000	605,000	4,020,000	262,000	520,000	782,000
1960	1,080,169	2,829,000	681,000	4,590,000	300,000	550,000	850,000
1961	1,165,155	2,873,000	812,000	4,850,000	280,000	620,000	900,000
1962	1,228,421	2,888,579	933,000	5,050,000	301,000	900,000	1,200,000
1963	1,213,166	3,015,088	991,746	5,210,000	315,000	1,040,000	1,355,000
1964	1,246,780	3,152,593	1,020,627	5,420,000	366,000	1,225,000	1,591,000
1965	1,351,734	3,220,717	1,027,549	5,600,000	463,000	1,400,000	1,863,000

	CHANGE IN STOCKS	REPORTED CONSUMPTION	ESTIMATED CONSUMPTION
	Total World	United States 1/	Total World 2/
1954	141,000 D	1,254,000	3,853,000
1955	20,000 I	1,502,000	4,227,000
1956	133,000 I	1,521,000	4,467,000
1957	104,000 I	1,348,000	4,581,000
1958	196,000 D	1,251,000	4,756,000
1959	30,000 I	1,463,000	4,772,000
1960	134,000 I	1,350,000	5,300,000
1961	20,000 D	1,463,000	5,730,000
1962	64,000 I	1,600,000	6,186,000
1963	5,000 D	1,744,000	6,575,000
1964	148,000 D	1,825,000	7,149,000
1965	66,000 I	2,005,000	7,400,000

1/ Source: U.S.B.M. 2/ Estimated. No official records have been published of either secondary unalloyed copper or of world consumption. Estimates are calculated from: "World Mine Production (U.S.B.M.) plus estimated secondary unalloyed copper, plus or minus change in stocks (Decrease or Increase)"

TABLE V

WORLD MINE PRODUCTION OF RECOVERABLE COPPER

BY CONTINENTS AND PRINCIPAL COUNTRIES IN THOUSANDS SHORT TONS

Years 1962, 1963, 1964 and 1965

Source: U.S.B.M.

	1962	1963	1964	1965
NORTH AMERICA:				
U.S.A.	1,228	1,213	1,247	1,352
Canada	465	458	487	517
Mexico	52	62	58	76
Other	14	21	22	27
	1,759	1,754	1,814	1,972
SOUTH AMERICA:				
Chile	646	663	685	642
Peru	183	196	194	196
Other	4	5	10	9
	833	864	889	847
EUROPE:				
U.S.S.R.	700	770	770	830
Yugoslavia	57	68	70	69
Others	162	176	160	163
	919	1,014	1,000	1,062
ASIA:				
China	110	99	99	99
Cyprus	28	29	19	22
Japan	114	118	117	118
Philippines	60	70	67	70
Turkey	31	28	38	36
Others	19	31	33	35
	362	375	373	380
AFRICA:				
No. Rhodesia (Zambia)	620	648	697	767
Belg. Congo	325	298	305	318
U. of So. Africa	51	61	66	67
Others	63	75	80	85
	1,059	1,082	1,148	1,237
AUSTRALIA:	118	128	117	102
TOTAL WORLD	5,090	5,220	5,340	5,600

Arizona Department of Mineral Resources August, 1966

TABLE VI

NEW (PRIMARY) REFINED COPPER WITHDRAWN FROM SUPPLY ON DOMESTIC ACCOUNT

Years 1960 - 1965 Source: U.S.B.M. Unit: Short Tons

	Year 1960	Year 1961	Year 1962
Ref. Prod. of New Cu from U.S. Ores	1,121,286	1,181,015	1,214,146
Ref. Prod. of New Cu from Foreign Ores	397,641	369,124	379,584
Total Ref. Prod. of New Copper	1,518,927	1,550,139	1,611,730
Imports of Refined Copper	142,709	66,855	98,820
Stocks at beginning of period	18,000	98,000	49,000
Total Available Supply	1,679,636	1,714,994	1,759,550
Exports of Refined Copper	433,762	432,253	336,525
Stocks at end of period	98,000	49,000	71,000
TOTAL	531,762	481,253	407,525
Withdrawn on Domes. Acc.(Apparent Cons.)	1,148,000	1,234,000	1,352,000
Reported Actual Consumption	1,349,896	1,462,830	1,599,676

	Year 1963	Year 1964	Year 1965
Ref. Prod. of New Cu From U.S. Ores	1,219,342	1,259,852	1,335,660
Ref. Prod. of New Cu from Foreign Ores	377,009	396,543	376,133
Total Ref. Prod. of New Copper	1,596,351	1,656,395	1,711,793
Imports of Refined Copper	119,165	137,707	137,406
Stocks at beginning of period	71,000	52,000	37,000
Total Available Supply	1,786,516	1,846,102	1,886,199
Exports of Refined Copper	311,479	316,230	324,962
Stocks at end of period	52,000	37,000	35,000
TOTAL	363,479	353,230	359,962
Withdrawn on Domes. Acc.(Apparent Cons)	1,423,000	1,493,000	1,526,000
Reported Actual Consumption	1,744,273	1,825,281	2,004,623

TABLE VII

IMPORTS OF COPPER INTO UNITED STATES

1964 and 1965

1962 and 1963

Source: U.S.B.M. & American Metal Market

	1964	1965
Ore Matte-Regulus (Copper Content)	52,012	36,919
Canada	25,029	6,408
Chile	2,078	3,191
Mexico	1,027	106
Peru	8,244	10,316
Philippines	9,487	12,532
U. of So. Africa	3,605	1,661
Australia	1,015	696
Other Countries	1,527	2,009
Blister Copper (Copper Content)	389,577	332,558
Mexico	12,386	6,733
Chile	251,092	187,843
Peru	75,664	82,421
U. of So. Africa	39,161	44,331
Other Countries	11,274	11,230
Refined Cathodes and Shapes	137,707	137,406
Canada	84,877	72,580
Chile	917	15,623
United Kingdom	2,513	308
Rhodesia & Nyasaland	11,979	3,190
Other Countries	36,021	45,705
TOTAL IMPORTS	579,296	506,883
TOTAL EXPORTS	321,645	340,498
EXCESS IMPORTS	257,651	166,385

YEARS	1962	1963
TOTAL IMPORTS	474,058	536,560
TOTAL EXPORTS	338,441	312,687
EXCESS IMPORTS	135,617	223,873

TABLE VIII

EXPORT OF COPPER FROM THE UNITED STATES

1963, 1964 and 1965

Source: U.S.B.M. and Bureau of Census

	1963	1964	1965
Ore, Concts. & Matte	1,210	5,415	15,536
Refined Ingots, Bars, Etc.	311,477	316,230	324,962
Argentina	1,809	5,738	6,794
Australia (Oceania)	1,101	5,101	6,405
Belgium-Luxembourg	3,298	1,001	1,240
Brazil	5,116	3,912	6,039
Canada	4,130	7,908	6,158
Denmark	1,652	1,826	2,302
Finland	327	76	572
France	38,038	34,610	38,598
Germany, West	69,228	58,804	34,279
Greece	474	- - -	146
India	55,539	47,219	51,045
Italy	56,240	55,454	51,734
Japan	15,500	20,621	22,052
Netherlands	7,973	5,394	9,834
Norway	2,856	4,261	3,795
Sweden	4,285	3,868	4,921
Switzerland	4,451	3,397	4,184
Taiwan	986	128	56
United Arab Republic	- - -	- - -	- - -
United Kingdom	33,081	54,929	68,952
Yugoslavia	551	- - -	- - -
Other Countries	4,842	1,983	5,856
Total Exports (Crude Refined)	312,687	321,645	340,498

TABLE IX

STOCKS OF REFINED COPPER REPORTED BY U. S. B. M. AND COPPER INSTITUTE *

STOCKS END OF PERIOD	IN U. S. A.		OUTSIDE U.S.A.
	U.S.B.M.	Copper Institute	Copper Institute
Year 1954	25,000	47,108	181,529
Year 1955	34,000	61,554	159,777
Year 1956	78,000	120,645	233,775
Year 1957	109,000	181,024	277,316
Year 1958	48,000	80,722	178,152
Year 1959	18,000	64,763	228,243
Year 1960	98,000	139,272	288,510
Year 1961	49,000	79.755	332,479
Year 1962	71,000	117,441	358,856
Year 1963	52,000	76,934	394,143
Year 1964	37,000	45,594	277,303
Year 1965	35,000	60,811	327,723

* Inventory data of the Bureau of Mines and Copper Institute always differ owing to somewhat different bases. After Jan. 1, 1947, differences were due chiefly to the method of handling metal in process of refining (included as "refined" by Copper Institute and as "unrefined" by the U.S.B.M.), and to other minor variations in interpretation until May, 1951. Then the Institute's inventory data began to include tonnages delivered to U. S. consumers at foreign ports. Bureau of Mines figures are on the basis of metal physically held at primary smelting and refining plants in the U. S. In the Bureau's classification cathodes to be used chiefly for casting into shapes are considered stocks in process and not refined stocks.

TABLE X

STOCKS OF REFINED COPPER, BLISTER, AND MATERIALS IN PROCESS REPORTED BY UNITED STATES BUREAU OF MINES IN SHORT TONS

END OF PERIOD	REFINED	BLISTER & MATERIALS IN PROCESS OF REFINING 1/	TOTAL
Year 1954	25,000	189,000	214,000
Year 1955	34,000	201,000	235,000
Year1956	78,000	261,000	339,000
Year 1957	109,000	274,000	383,000
Year 1958	48,000	257,000	305,000
Year 1959	18,000	253,000	271,000
Year 1960	98,000	261,000	359,000
Year 1961	49,000	236,000	285,000
Year 1962	71,000	246,000	317,000
Year 1963	52,000	252,000	304,000
Year 1964	37,000	246,000	283,000
Year 1965	35,000	246,000	281,000

1/ Includes copper in transit from smelter in the U. S. to refineries therein.

TABLE XI

REFINED COPPER CONSUMED IN U. S. 1962-1965
BY CLASSES OF CONSUMERS

Source: U.S.B.M. Unit: Short Tons

Class of Consumer	Cathodes	Wire bars	Ingots and ingot bars	Cakes and slabs	Billets	Other	Total
1962:							
Wire mills	- - - -	913,131	8,964	- - -	- - -	813	922,908
Brass mills	113,402	42,799	97,090	184,085	198,676	97	636,149
Chemical plants	- - - -	- - - -	761	- - - -	- - - -	727	1,488
Secondary "	7,368	- - - -	1,928	159	- - - -	5	9,460
Foundries	5,760	41	8,417	30	327	1,803	15,658
Miscellaneous 1/	1,066	1	7,259	24	602	5,061	14,013
Total	127,596	955,972	124,419	184,298	199,605	7,786	1,599,676
1963:							
Wire mills	- - - -	1,024,093	11,271	- - - -	- - - -	798	1,036,162
Brass mills	145,271	44,250	87,832	186,876	209,576	102	673,907
Chemical plants	- - - -	- - - -	726	- - - -	- - - -	512	1,238
Secondary smelt.	1,906	- - - -	1,731	11	- - - -	4	3,652
Foundries	3,575	118	7,584	12	413	1,450	13,152
Miscellaneous 1/	1,163	- - - -	9,114	23	572	5,290	16,162
Total	151,915	1,068,461	118,258	186,922	210,561	8,156	1,744,273
1964:							
Wire mills	- - - -	1,086,215	10,424	- - - -	- - - -	879	1,097,518
Brass mills	129,944	44,756	111,506	184,434	219,651	115	690,406
Chemical plants	- - - -	- - - -	1,621	- - - -	- - - -	550	2,171
Secondary smelt.	2,291	- - - -	2,308	9	- - - -	113	4,721
Foundries	3,792	61	9,654	- - - -	310	1,122	14,939
Miscellaneous 1/	1,023	38	7,565	(2)	700	3/6,200	15,526
Total	137,050	1,131,070	143,078	184,443	220,661	8,979	1,825,281
1965:							
Wire mills	100	1,212,234	10,286	- - - -	- - - -	812	1,223,432
Brass mills	121,815	35,312	156,107	195,742	230,816	114	739,906
Chemical plants	- - - -	- - - -	1,701	- - - -	- - - -	723	2,424
Secondary Smelt.	3,506	- - - -	2,670	2	- - - -	279	6,457
Foundries	2,918	70	11,806	- - - -	448	1,266	16,508
Miscellaneous 1/	1,126	26	7,047	(2)	719	3/6,978	15,896
Total	129,465	1,247,642	189,617	195,744	231,983	10,172	2,004,623

1/ Includes iron and steel plants, primary smelters producing alloys other than copper, consumers of copper powder and copper shot, and miscl. manufacturers.
2/ Included with "Other" to avoid disclosing individual company confidential data.
3/ Includes "Cakes and slabs" to avoid disclosing individual company confidential data.

Arizona Department of Mineral Resources August, 1966

TABLE XII

U. S. PRODUCTION AND CONSUMPTION OF COPPER

Source: U.S.B.M.

YEAR	MINE PRODUCTION	SECONDARY PRODUCTION*	TOTAL	TOTAL ACTUAL CONSUMPTION	PRODUCTION AS % OF CONSUMPTION
1946	608,737	136,909	745,646	1,187,009	62.8
1947	847,563	303,092	1,150,655	1,463,294	78.6
1948	834,813	284,026	1,118,839	1,420,584	78.8
1949	752,750	250,089	1,002,839	1,129,686	88.8
1950	909.343	260,704	1,170,047	1,424,434	82.2
1951	928,330	186,462	1,114,792	1,416,865	78.7
1952	925,359	173,904	1,099,263	1,479,732	74.3
1953	926,448	242,855	1,169,303	1,494,215	78.3
1954	835,472	212,241	1,047,713	1,254,729	83.5
1955	998,570	246,928	1,245,498	1,502,004	82.9
Totals 1946-54	8,567,385	2,297,210	10,864,595	13,772,552	
10 Yr. Avg.	856,739	229,721	1,086,460	1,377,255	78.9
1956	1,104,156	273,060	1,377,216	1,521,389	90.5
1957	1,086,141	248,015	1,334,156	1,347,815	99.0
1958	979,329	255,121	1,234,450	1,250,677	98.7
1959	824,846	261,588	1,086,434	1,463,031	74.3
1960	1,080,169	300,259	1,380,428	1,349,896	102.3
1961	1,165,155	279,511	1,444,666	1,462,830	98.8
1962	1,228,421	301,374	1,529,795	1,599,676	95.6
1963	1,213,166	314,643	1,527,809	1,744,273	87.6
1964	1,246,780	366,197	1,612,977	1,825,281	88.4
1965	1,351,734	462,811	1,814,545	2,004,623	90.5
Totals 1956-1965	11,279,897	3,062,579	14,342,476	15,569,491	
10 Yr. Avg.	1,127,990	306,258	1,434,248	1,556,949	92.1

* Unalloyed Copper.

TABLE XIII

ESTIMATED ANNUAL COPPER PRODUCTIVE CAPACITY

ARIZONA, UNITED STATES, OTHER FREE COUNTRIES, COMMUNIST COUNTRIES

	Tons Copper Capacity Est. by Ariz. Dept. of Mineral Resources and U.S.B.M.	Future Annual Capacity Est. By Eng. & Mining Journal James Boyd, and Sir Ronald Prain
ARIZONA:	1965	1970
Morenci	132,000	150,000
New Cornelia	78,000	80,000
Lavender Pit	44,000	45,000
Copper Queen	34,000	35,000
Ray	73,000	80,000
Miami - Copper Cities	67,000	65,000
Inspiration	110,000	120,000
San Manuel	100,000	110,000
Magma - (Superior)	19,000	20,000
Silver Bell	25,000	30,000
Mission	56,000	75,000
Pima	25,000	50,000
Bagdad	20,000	22,000
Duval - (Esperanza - Ithaca Peak)	47,000	48,000
Sub-Total Arizona	830,000	930,000
OTHER STATES:		
Utah	250,000	325,000
Montana	111,000	190,000
New Mexico	96,000	115,000
Nevada	85,000	100,000
Michigan	80,000	100,000
Other States	78,000	140,000
Sub-Total	700,000	970,000
GRAND TOTAL - UNITED STATES	1,530,000*	1,900,000
OTHER FREE COUNTRIES:		
Canada	575,000	740,000
Chile	715,000	1,665,000
Peru	220,000	220,000
Western Europe	160,000	160,000
Asia	270,000	320,000
Africa	1,375,000	1,455,000
Australia	115,000	185,000
Other Countries	60,000	125,000
Sub-Total - Free Countries Other than U. S.	3,490,000	4,870,000
GRAND TOTAL ALL FREE COUNTRIES	5,020,000	6,770,000
COMMUNIST COUNTRIES	915,000	1,000,000
GRAND TOTAL - WORLD	5,935,000	7,770,000

* Actual production of United States during 1965 estimated by U.S.B.M. at 1,351,734 tons of copper, and estimated to have operated at 88.35% of full possible operating time.

TABLE XIV

COPPER MINING EMPLOYMENT, WAGES AND HOURS IN U. S. AND ARIZONA

Base Period (1947-1949) Compared with Three-Year Period (1963-1965)

Source: "Employment Earnings," U. S. Dept of Labor U.S.B.M. Mineral Yearbooks, "Arizona's Current Employment Development." Arizona Employment Security Commission.

	"A" Number Of all Employees		"B" Weekly Earnings		"C" Weekly Hours		"D" Hourly Earnings	
	ARIZONA	U.S.	ARIZONA	U. S.	ARIZONA	U.S.	ARIZONA	U.S.
Base Period 1947-49 Avg.	10,700	27,100	64.20	$ 63.11	44.83	44.10	$ 1.432	$1.431
Last 3 Yrs.								
1963	13,393	27,800	133.81	124.48	44.56	43.06	3.003	2.891
1964	13,275	27,000	140.97	130.42	45.00	42.90	3.133	3.040
1965	14,200	29,900	146.11	136.71	45.01	43.40	3.246	3.150
1963-65 Avg.	13,623	28,233	$140.30	$130.54	44.86	43.12	$ 3.127	$3.027

	"E" Annual Man Hours "A" x "C" x 52		"F" Annual Earnings "E" x "D"		Per Man Annual Earnings "F" ÷ "A"	
	ARIZONA	U. S.	ARIZONA	U. S.	ARIZONA	U. S.
Base Period 1947-49 Avg.	24,943,412	62,145,720	$35,718,966	$ 88,930,525	$ 3,338	$3,282
Last 3 Yrs.						
1963	31,033,188	62,247,536	93,192,664	179,957,627	6,958	6,473
1964	31,063,500	60,231,600	97,321,946	183,104,064	7,331	6,782
1965	33,235,384	67,478,320	107,882,089	212,556,708	7,597	7,109
1963-65 Avg.	31,777,357	63,319,152	$99,465,566	$191,872,800	$7,301	$ 6,796

(Continued)

TABLE XIV (Continued)

	"G" Tons Copper Ores		"H" Pounds Equiv.* Copper Produced From Copper Ores	
	ARIZONA	U. S.	ARIZONA	U. S.
Base Period 1947-1949 Avg.	38,082,754	82,875,491	748,056,267	1,625,975,640
Last 3 Yrs.				
1963	80,615,132	146,449,540	1,249,982,000	2,271,150,000
1964	86,132,039	155,200,464	1,279,898,700	2,372,611,000
1965	92,859,535	173,286,198	1,341,593,000	2,533,750,000
1963-65 Avg.	86,535,569	158,312,067	1,290,491,200	2,392,504,000

* Includes value of gold and silver recovered from copper ore, converted into pounds copper at average price.

	Tons Copper Ore Produced Per Man-Hour "G" ÷ "E"		Lbs. Equiv. Copper Produced Per Man Hour "H" ÷ "E"		Earnings Per Man-Hour "D"	
	ARIZONA	U. S.	ARIZONA	U. S.	ARIZONA	U. S.
Base Period 1947-49 Avg.	1.5268	1.3336	29.9901	26.1639	$ 1.432	$ 1.431
1963-65 Avg.	2.7232	2.5002	40.6104	37.7850	3.127	3.027
% Incr. in 16 Yrs.	78.36	87.48	35.41	44.42	118.37	111.53
Per Year	4.90	5.47	2.21	2.78	7.40	6.97

TABLE XV

SUMMARY OF ESTIMATED* COPPER MINING EMPLOYMENT, WEEKLY EARNINGS, WEEKLY HOURS, HOURLY EARNINGS, IN ARIZONA AND UNITED STATES, BY YEARS 1947 to 1965 INCLUSIVE

Source: "Employment and Earnings" - U. S. Dept. of Labor.
"Arizona's Current Employment Developments" - Arizona Employment Security Commission.

	ALL EMPLOYEES		WEEKLY EARNINGS		WEEKLY HOURS		HOURLY EARNINGS	
	Arizona	U. S.	Arizona	U. S.	Arizona	U. S.	Arizona	U. S.
1947	10,700	25,700	$ 59.40	59.27	45.0	44.8	$ 1.32	$ 1.32
1948	10,900	27,800	65.99	65.81	45.2	45.2	1.46	1.46
1949	10,500	27,300	66.98	63.96	44.3	42.3	1.512	1.512
1947-49 Avg.	10,700	27,100	$ 64.20	$63.11	44.83	44.1	$ 1.432	$ 1.431
1950	9,500	25,800	$ 75.80	$72.05	46.5	45.0	$ 1.63	$ 1.601
1951	10,100	25,900	83.01	78.37	47.7	46.1	1.74	1.70
1952	10,700	26,500	90.31	85.73	47.06	45.6	1.92	1.88
1953	11,400	28,600	96.03	91.60	46.73	45.8	2.055	2.00
1954	11,900	27,400	96.60	87.33	45.31	42.6	2.132	2.05
1955	11,800	27,200	104.90	95.70	47.0	44.1	2.232	2.17
1956	13,300	34,400	112.07	100.95	47.1	43 7	2.377	2.31
1957	14,000	32,500	106.22	98.23	43.8	41.1	2.425	2.39
1958	13,500	28,400	95.40	94.62	39.8	39.1	2.399	2.42
1959	11,100	22,400	108.15	106.25	42.8	42.5	2.526	2.50
1960	12,733	29,600	116.83	114.75	43.69	43.3	2.674	2.65
1961	13,117	27,000	126.29	119.03	44.8	43.6	2.817	2.73
1962	13,350	28,500	129.29	120.98	44.3	42.9	2.920	2.82
1963	13,393	27,800	133.81	124.48	44.6	43.1	3.003	2,89
1964	13,275	27,000	140.97	130.42	45.0	42.9	3.113	3.04
1965	14,200	29,900	146.11	136.71	45.0	43.4	3.127	3.15

* These estimates include all full and part-time wage and salary workers who worked or received pay during the pay period ending nearest the 15th of the month.

TABLE XVI

UNITED STATES COPPER MINING - OUTPUT IN TONS COPPER ORE, VALUE OF COPPER, GOLD, SILVER PRODUCED

Source: U. S. Bureau of Mines

	Tons Copper Ore Annual Rate	Gold Ounces & Value	Silver Ounces & Value	Copper Pounds & Value	Lbs.Cu Recov. Per Ton & Copper Price	Value of Copper, Gold & Silver	Lbs.Copper Equiv. to Total Val. Cu, Gold & Silver
1947-1949	82,875,491	479,589 $16,785,615	7,785,382 $7,045,770	1,511,500,640 $ 314,664,195	18.2 lbs 20.818¢	$338,495,580	1,625,795,640
1951	95,494,214	564,471 $19,756,485	8,362,150 $7,567,746	1,709,655,673 $ 413,736,679	17.9 lbs 24.2¢	$441,060,910	1,822,566,000
1959	103,715,843	367,455 $12,860,925	6,838,927 $6,189,229	1,533,867,852 $ 478,566,785	14.8 lbs 31.2¢	$497,616,939	1,594,926,200
1960	134,994,082	539,249 $18,873,715	9,469,133 $8,569,565	1,970,387,781 $ 630,524,096	14.6 lbs. 32.0 ¢	$657,967,376	2,056,147,800
1961	142,721,798	532,215 $18,627,525	10,385,661 $9,601,544	2,145,224,433 $ 641,422,000	15.0 lbs 29.9¢	$669,651,000	2,239,636,000
1962	150,216,710	483,243 $16,913,505	10,944,522 $11,874,806	2,239,326,000 $ 689,712,408	14.9 lbs 30.8¢	$718,500,719	2,332,794,000
1963	146,449,540	438,537 $15,348,795	10,309,897 $13,187,595	2,178,498,800 $ 670,977,630	14.9 lbs 30.8¢	$699,514,020	2,271,150,000
1964	155,200,464	430,630 $15,072,050	11,470,890 $14,831,861	2,280,880,781 $ 743,567,141	14.7 lbs 32.6¢	$773,471,052	2,372,611,000
1965	173,286,198	567,531 $19,863,585	12,801,638 $16,552,518	2,430,879,000 $ 860,531,166	14.0 lbs 35.4¢	$896,947,269	2,533,750,000

Arizona Department of Mineral Resources

August, 1966

ARIZONA

ARIZONA'S PART IN THE ECONOMY OF THE COPPER INDUSTRY

In the last ten years, Arizona has increased its copper production from 505,908 tons of recoverable copper in the year 1956 to 703,377 tons in the year 1965, or about 39 percent. The annual tonnage of copper ore has increased from 60,468,580 tons in 1956 to an estimated 92,859,535 tons in 1965, or over 53 percent. New production came from Inspiration's Christmas Mine beginning in 1962, Duval's Esperanza Mine in 1959, and Asarco's Mission Unit in 1961. In addition, Kennecott's Ray Mine production expanded, beginning in 1957, and Bagdad expanded its operations in 1962, by the construction of an acid plant and leaching plant to treat its oxidized ores. Finally, Duval's Ithaca Peak operation in Mohave County began in 1964, attaining a production of 4,600,426 tons of ore, over 38,000,000 pounds of copper in 1965.

As a result of this new production, Arizona has not only maintained its rank as the Number One copper producing state, but has raised its proportion of United States production from 45.7 percent in 1956 to 52.0 percent in 1965 (See Table III).

CONTENTS OF ARIZONA SUPPLEMENT

~~Note * This report~~ has been revised and will be preprinted as an Area Report for the 1965 Minerals Yearbook. It will be mailed separately as soon as received from Washington. The total mineral production of Arizona will be found in Table XXI.

August, 1966

TABLE XVII

ARIZONA COPPER MINING - OUTPUT IN TONS COPPER ORE, VALUE OF COPPER, GOLD, SILVER PRODUCED

Source: U. S. Bureau of Mines

	Tons Copper Ore Annual Rate	Gold Ounces & Value	Silver Ounces & Value	Copper Pounds & Value	Lbs. Cu Recov Per Ton & Copper Price	Value of Copper, Gold & Silver	Lbs Copper Equiv. To Total Val. Cu, Gold & Silver
1947 to 1949	38,082,754	79,612 $2,786,420	2,603,485 2,356,154	723,353,767 $150,588,843	19.0 Lbs/ton 20.818¢	$155,731,417	748,056,267
1951	42,784,388	83,521 $2,923,235	3,087,865 2,794,518	775,609,514 $187,697,501	18.1 Lbs/ton 24.2¢	193,415,254	799,236,600
1960	66,032,439	115,602 $4,046,070	3,689,622 $3,339,108	993,370,700 $317,878,624	15.0 Lbs/ton 32.0¢	$325,263,802	1,016,449,300
1961	71,918,991	129,184 $4,521,440	4,380,458 $4,049,690	1,092,360,900 $326,845,395	14.6 Lbs/ton 29.9¢	$335,416,435	1,121,007,000
1962	78,868,147	117,362 $4,107,670	4,571,370 $4,959,936	1,200,945,700 $369,891,276	15.2 Lbs/ton 30.8¢	$378,958,882	1,230,386,000
1963	80,615,132	121,177 $4,241,195	4,494,239 $5,748,132	1,217,337,700 $ 372,505,336	15.1 Lbs/ton 30.6¢	$382,494,463	1,249,982,000
1964	86,132,039	133,983 $4,689,405	4,915,362 $6,355,563	1,279,898,700 $417,246,976	14.9 Lbs/ton 32.6¢	$428,291,944	1,313,779,000
1965	92,859,535	133,830 $4,684,050	5,352,850 $6,921,235	1,308,809,700 $463,318,634	14.1 Lbs/ton 35.4¢	$474,923,919	1,341,593,000

Arizona Department of Mineral Resources

August, 1966

TABLE XVIII

ARIZONA MINE PRODUCTION OF COPPER, LEAD, ZINC, GOLD AND SILVER

1858 - 1965 Incl. - In Terms of Recoverable Metals

Source: U.S.B.M.

	COPPER		LEAD		ZINC	
	Short Tons	Value (thousands	Short Tons	Value (thousands)	Short Tons	Value (thousands
1874 - 1964	19,778,651	$ 8,328,420	633,706	$ 123,822	963,282	$ 232,729
1965	703,377	497,991	5,913	1,845	21,757	6,353
Total 1874-1965	20,482,028	$ 8,826,411	639,619	$ 125,667	985,039	$ 239,082
Avg. Price	21.547¢		9.824¢		12.136¢	

	GOLD		SILVER		
	Ounces	Value (Thousands)	Ounces	Value (Thousands)	TOTAL VALUE
1858 - 1964	13,170,610	$ 348,467	381,070,809	$ 302,601	$ 9,336,039,000
1965	150,431	5,265	6,095,000	7,881	519,335,000
Total 1858-1965	13,321,041	$ 353,732	387,165,809	$ 310,482	$ 9,855,374,000
Avg. Price	$26.5544		$0.801936		

Estimated Value of Other Metals and Non-metallics Production in Arizona through 1964	$ 621,101,000
Estimated Value of Other Metals and Non-metallics Production in Arizona in 1965	60,835,000
Estimated Value of Other Metals and Non-metallics Production in Arizona through 1965	$ 681,936,000
GRAND TOTAL ESTIMATED VALUE OF ARIZONA'S MINERAL PRODUCTION THROUGH 1965	$10,537,310,000

Arizona Department of Mineral Resources

August, 1966

TABLE XIX

MINE PRODUCTION OF GOLD, SILVER, COPPER, LEAD AND ZINC IN ARIZONA IN THE YEAR 1965

BY CLASS OF ORE IN TERMS OF RECOVERABLE METALS

Source	Number of mines 1/	Material sold or treated (short tons)	Gold (troy ounces)	Silver (troy ounces)	Copper (pounds)	Lead (pounds)	Zinc (pounds)
Lode ore:							
Dry gold - - - - - -	3	96	39	85	100	- - -	- - -
Dry Gold-silver - - - - - -	6	114,793	428	9,519	1,795,300	- - -	- - -
Dry Silver - - - - - -	17	23,847	24	31,348	194,300	1,900	900
Total - - - - - -	26	138,736	491	40,952	1,989,700	1,900	900
Copper - - - - - -	40	92,859,535	133,830	5,352,850	1,308,809,700	13,200	2,212,200
Copper-zinc - - - - - -	4	85,172	87	21,602	4,332,700	22,500	9,398,000
Lead - - - - - -	7	1,403	30	2,812	2,900	109,300	8,900
Lead-Zinc - - - - - -	4	336,557	15,402	624,807	650,000	11,463,900	30,865,100
Zinc - - - - - -	1	2,763	- -	8,828	114,400	112,200	995,400
Total - - - - - -	56	93,285,430	149,349	6,010,899	1,313,909,700	11,721,100	43,479,600
Other "lode" material:							
Gold tailings - - - - - -	1	19	8	2	- - -	- - -	- - -
Gold-silver Tailings and silver tailings 2/ - - -	4	29,815	529	15,213	97,400	- - -	- - -
Copper cleanup and copper smelter cleanup 2/ - - -	(3/)	807	43	1,061	176,900	- - -	- - -
Copper precipitates - - - -	19	63,159	- -	- - -	89,282,500	- - -	- - -
Lead cleanup - - - - - -	(3/)	2	- -	- - -	- - -	1,500	- - -
Lead tailings - - - - - -	2	11,200	1	946	- - -	60,900	3,400
Lead-zinc mill cleanup - -	(3/)	4/ 72	4/ 2	4/ 26,174	4/ 1,297,800	4/ 40,600	4/ 30,100
Zinc mill cleanup - - - - -	(3/)	(4/)	(4/)	(4/)	(4/)	(4/)	(4/)
Uranium ore - - - - - -	- - -	- - -	- - -	(4/)	(4/)	- - -	- - -
Total - - - - - -	26	105,074	583	43,396	90,854,600	103,000	33,500
Total "lode" material	92	93,529,240	150,423	6,095,247	1,406,754,000	11,826,000	43,514,000
Placer - - - - - -	2	- - -	8	1	- - -	- - -	- - -
Total, all sources - - - -	94	93,529,240	150,431	6,095,248	1,406,754,000	11,826,000	43,514,000

1/ Detail will not necessarily add to totals because some mines produce more than one class of material.
2/ Combined to avoid disclosing individual company confidential data. 3/ From properties not classed as mines.
4/ Lead-zinc mill cleanup, zinc mill cleanup, and uranium ore combined to avoid disclosing individual company confidential data.

TABLE XX

COPPER PRODUCTION RECORD OF LARGE ARIZONA COPPER MINES

YEARS 1964 and 1965

Source: U.S.B.M. & Company Reports

	1964		1965	
	Tons Copper Ore Mined	Pounds Copper Recovered	Tons Copper Ore Mined	Pounds Copper Recovered
PHELPS DODGE:				
Morenci	18,632,000	258,788,000	19,089,442	255,131,256
New Cornelia	10,371,000	141,635,000	10,655,051	141,810,145
Lavender Pit	6,001,000	83,017,000	5,660,900	71,372,966
Copper Queen	749,000	65,050,000	766,352	61,896,968
Sub-Total	35,753,000	548,490,000	36,171,745	530,211,335
KENNECOTT - Ray	6,884,953	116,469,877	8,673,018	125,621,177
Precipitate Copper				18,684,626
Sub-Total	6,884,953	116,469,877	8,673,018	144,305,803
MIAMI:				
Miami		17,757,353		17,905,982
Copper Cities	3,163,565	35,969,908	3,200,202	34,950,395
Copper " Dump Leach		5,719,192		4,258,791
Castle Dome		4,882,984		4,059,881
Sub-Total	3,163,565	64,329,437	3,200,202	61,175,049
INSPIRATION	5,836,968	97,815,150	5,799,040	106,871,327
Christmas Div.	953,231	24,952,471	715,671	17,281,732
Sub-Total	6,790,199	122,767,621	6,514,711	124,153,059
MAGMA:				
San Manuel	12,442,752	185,176,914	13,504,024	187,533,728
Superior	377,575	34,127,535	439,911	38,904,231
Sub-Total	12,820,327	219,304,449	13,943,935	226,437,959
A.S. & R. CO:				
Silver Bell	3,044,000	47,367,828	3,178,300	)37,394,157
			Pptes.	) 4,580,088
Mission Unit	7,579,800	104,834,797	6,610,700	109,469,399
Sub-Total	10,623,800	152,202,625	9,789,000	151,443,644
PIMA MINING CO: Pima	2,850,410	60,580,041	2,646,024	35,953,478
BAGDAD COPPER CORP:	2,076,577	23,756,772	2,017,101	24,718,435
From Leach		15,507,042		15,832,998
Sub-Total	2,076,577	39,263,814	2,017,101	40,551,433
DUVAL - Esperanza	4,131,096	40,165,350	4,065,811	39,034,714
Precipitate Copper		4,969,494		4,348,005
Mineral Park			4,600,426	36,618,689
Precipitate Copper				1,483,888
Sub-Total	4,131,096	45,134,844	8,666,237	81,485,296
TOTALS	85,093,927	1,368,542,708	91,621,973	1,395,717,056
Other Copper Producers	1,713,749	13,433,292	1,907,267	11,036,944
GRAND TOTAL	86,807,676	1,381,976,000	93,529,240	1,406,754,000

TABLE XXII

MINERAL PRODUCTION OF LARGE AND SMALL PRODUCERS IN ARIZONA IN 1965 1/

Source: U.S.B.M Area Report for Arizona, 1965

LARGE COPPER PRODUCERS:*		PRODUCTION	VALUE
Copper	(tons)	697,859	$494,084,000
Gold	(Ozs.)	133,830	4,684,000
Silver	(Ozs.)	5,352,850	6,921,000
Molybdenum (Content of Concentrates)	(Lbs.)	9,399,000	15,880,000
			521,569,000
SMALL MINERAL PRODUCERS:			
Asbestos	(short tons)	3,469	441,000
Clays	(thousand short tons)	3/ 129	164,000
Copper (Recoverable Content of Ores)	(tons)	5,518	3,907,000
Diatomite	(short tons)	295	8,000
Gem Stones		4/	120,000
Gold (Recoverable content of ore, etc.)	(Ozs).	16,601	581,000
Gypsum	(thousand short tons)	103	540,000
Iron Ore (Usable)	(thousand long tons, gross wgt.)	8	51,000
Lead (Recoverable content of ores, etc.)	(short tons)	5,913	1,845,000
Lime	(thousand short tons)	204	3,543,000
Mercury	(76-pound flasks)	158	90,000
Natural Gas (marketed	(million cubic feet)	p/ 2,705	p/ 325,000
Petroleum (crude)	(thousand 42-gallon barrels)	97	W
Pumice	(thousand short tons)	1,273	1,605,000
Sand and Gravel	(thousand short tons)	14,918	16,621,000
Silver (Recoverable content of ore, etc.)	(troy ozs.)	742,150	960,000
Stone	(thousand short tons)	2,474	4,171,000
Tungsten concentrate (60%WO_3)	(short tons)	3	5,000
Uranium Ore	(short tons)	117,898	3,918,000
Vanadium	(short tons)	W	381,000
Zinc (recoverable content of ore)	(short tons)	21,757	6,353,000
Value of items that cannot be disclosed: Asbestos (1964) cement, feldspar, helium, mica (scrap), perlite, pyrites, and values indicated by footnotes - - 3 and symbol W.			6/12,972,000
Small Mine Sub-Total			58,601,000
TOTAL			580,170,000
Percentage due to Small Mines			10.1%

* Phelps Dodge, Kennecott, Inspiration (incl. Christmas), Miami, Magma (incl San Manuel) Asarco's Silver Bell & Mission units, Pima, Bagdad, Duval's Esperanza and Mineral Park.

p/ Preliminary. W-withheld to avoid disclosing individual company confidential data.

1/ Production as measured by mine shipments, sales, or marketable production (including consumption by producers).

3/ Excludes bentonite; included with "Value of items that cannot be disclosed."

4/ Weight not recorded.

6/ Value of mineral fuels, $2,346,000; value of nonmetals, $10.626,000.

TABLE XXII

SUMMARY OF TOTAL COVERED EMPLOYMENT & WAGES IN ARIZONA COPPER MINING
1947 - 1965 INCLUSIVE

Source: Arizona Employment Security Commission
United States Bureau of Mines

COPPER MINING	No. Covered Employees	Covered Wages	Average Annual Wage	Tons Copper Ores	Average Weekly Wage
1947	11,340	$ 36,365,277	$ 3,207	37,810,448	$ 61.67
1948	11,493	41,318,524	3,595	39,072,204	69.13
1949	11,001	40,612,224	3,692	37,365,611	71.00
1950	10,181	41,994,321	4,125	41,757,273	79.33
1951	10,754	47,825,698	4,447	42,784,388	85.52
1952	11,365	54,950,235	4,835	44,472,522	93.14
1953	12,068	62,742,982	5,199	45,187,838	99.98
1954	12,502	65,518,853	5,241	43,072,894	100.79
1955	12,399	71,293,263	5,750	52,189,728	110.58
1956	14,008	83,568,996	5,966	60,468,580	114.73
1957	14,652	85,125,320	5,809	59,571,834	111.71
1958	14,100	74,726,972	5,300	56,255,809	101.93
1959	11,568	72,095,130	6,232	53,121,545	119.85
1960	13,764	90,312,848	6,562	66,032,439	126.19
1961	14,275	97,271,286	6,814	71,918,991	131.04
1962	14,408	101,920,108	7,074	78,868,147	136.04
1963	14,303	104,291,588	7,292	80,615,132	140.23
1964	14,720	113,792,031	7,730	86,132,039	148.65
1965	15,239	122,163,124	8,016	92,859,535	154.16

TABLE XXIII

AVERAGE NUMBER OF COVERED EMPLOYEES, TOTAL WAGES, AVERAGE ANNUAL WAGE, AND AVERAGE WEEKLY WAGE

Base Period 1947-1949 and Years 1963, 1964 and 1965

ARIZONA INDUSTRIES COVERED BY SOCIAL SECURITY

Compiled by Arizona Department of Mineral Resources
Source: Arizona Employment Security Commission

	Average No. of 1/ Employees	Total Wages	Average Annual Wage	Average Weekly Wage
		Base Period 1947-1949		
Copper Mining Only 2/	11,278	$ 39,432,008	$3,496	$ 67.23
Copper Smelting 3/	1,500	5,175,000	3,450	66.35
All Mining & Smelting. . . .	12,778	$ 44,607,008	$3,491	$ 67.13
Other Mining & Quarrying . . .	1,592	4,913,010	3,085	59.33
All Mining,Quarrying & Smelting	14,370	49,520,018	3,446	66.27
Manufacturing (Excl.Smelting).	12,639	36,910,624	2,920	56.15
Construction	10,844	35,424,826	3,267	62.83
Trans.& Utilities(Excl.R.R.s) .	10,530	29,948,944	2,844	54.69
Wholesale - Retail Trade. . . .	36,213	91,916,860	2,538	48.81
Services Misc. (Incl Agri.) . .	18,643	43,103,526	2,312	44.46
Totals and Averages	103,239	$286,824,798	$2,778	$ 53.42
		YEAR 1963		
Copper Mining Only 2/	14,303	$104,291,588	$7,292	$140.23
Copper Smelting 3/	1,817	12,144,000	6,684	128.53
All Mining & Smelting. . . .	16,120	116,435,588	7,223	138.90
Other Mining & Quarrying. . . .	1,591	9,299,379	5,845	112.40
All Mining,Quarrying & Smelting	17,711	125,734,967	7,099	136.52
		YEAR 1964		
Copper Mining Only 2/	14,720	$113,792,031	$7,730	$148.65
Copper Smelting 3/	1,790	12,428,972	6,944	133.53
All Copper Mining & Smelting .	16,510	126,221,003	7,645	147.02
Other Mining & Quarrying. . . .	1,560	9,421,262	6,039	116.14
All Mining,Quarrying & Smelting	18,070	$135,642,265	$7,506	$144.35
		YEAR 1965		
Copper Mining Only 2/	15,239	$122,163,124	$8,016	$154.16
Copper Smelting 3/	1,808	12,892,848	7,131	137.13
All Copper Mining & Smelting.	17,047	135,055,972	7,922	152.35
Other Mining & Quarrying. . . .	1,438	9,109,659	6,335	121.83
All Mining,Quarrying & Smelting	18,485	144,165,631	$7,799	$149.99
Manufacturing (Excl. Smelting).	62,574	408,893,517	6,535	125.67
Construction	22,892	163,351,181	7,136	137.23
Trans.& Utilities (Excl. R.Rs.)	21,165	137,827,200	6,513	125.25
Wholesale-Retail Trade	91,128	398,693,547	4,375	84.14
Services Misc. (Incl. Agri) . .	65,695	298,848,828	4,549	87.48
TOTALS - AVERAGES	281,939	$1,551,779,904	$5,504	$105.85

1/ This number includes all covered employees on payroll, and is not restricted to production workers only, on which the average hourly and weekly earnings are reported. 2/ This number includes all copper mining and milling employees and some copper smelting employees not reported under Manufacturing by the Employment Security Commission. 3/ Smelting Employment has been segregated from Manufacturing as reported by the Employment Security Commission.