

ARIZONA COVERED EMPLOYEES AND WAGE PAYMENTS BY MAJOR INDUSTRIES

By years 1940 - 1951 Incl.

Source: Arizona Employment Security Commission

Industry	Average No. of Employees	Wage Payments	Average Annual Wage	Average No. of Employees	Wage Payments	Average Annual Wage	Average No. of Employees	Wage Payments	Average Annual Wage
		1940			1941			1942	
Copper Mining Only	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	13,073	\$ 30,604,037	\$ 2,341
All Mining & Quarrying	12,792	\$ 21,151,176	\$ 1,653	14,576	\$ 26,876,863	\$ 1,844	15,233	34,302,289	2,252
Smelting	1,529	2,308,790	1,510	1,542	2,639,286	1,712	1,735	3,469,384	2,000
All Mining, Quarrying & Smelting	14,321	\$ 23,459,967	\$ 1,638	16,118	\$ 29,516,149	\$ 1,831	16,968	\$ 37,771,673	\$ 2,226
Manufacturing (other than smelting)	6,645	8,427,303	1,268	7,116	10,164,906	1,428	9,597	17,552,133	1,829
Construction	3,871	5,124,933	1,324	6,585	11,199,409	1,701	18,522	44,737,133	2,415
Transport. & Pub. Utilities	4,744	6,385,832	1,346	6,234	8,899,250	1,428	6,585	10,413,396	1,581
Wholesale & Retail Trade	21,476	24,992,316	1,164	22,577	29,141,244	1,291	23,394	32,296,135	1,381
Services & Misc.(Incl.Agric.)	9,252	10,267,519	1,110	10,213	12,973,102	1,270	12,741	14,947,402	1,173
Totals & Averages	60,309	\$ 78,657,872	\$ 1,304	68,843	\$ 101,894,060	\$ 1,480	87,807	\$ 160,717,872	\$ 1,830

		1943			1944			1945	
Copper Mining only	13,656	\$ 34,932,576	\$ 2,558	11,349	\$ 28,630,213	\$ 2,523	8,930	\$ 22,946,364	\$ 2,570
All Mining & Quarrying	15,366	38,410,590	2,500	12,709	31,611,340	2,487	9,864	25,120,056	2,547
Smelting	3,081	6,573,739	2,134	3,336	8,013,658	2,402	3,034	7,406,110	2,441
All Mining, Quarrying & Smelting	18,447	44,984,329	2,439	16,045	39,624,998	2,470	12,898	32,526,166	2,522
Manufacturing (other than smelting)	15,791	35,304,137	2,236	19,423	49,251,321	2,536	16,723	43,421,461	2,597
Construction	13,432	36,347,953	2,706	5,101	13,754,413	2,696	5,590	15,300,263	2,737
Transport. & Pub. Utilities	6,955	12,715,167	1,828	6,771	13,702,442	2,024	7,122	15,755,464	2,212
Wholesale & Retail Trade	25,617	38,480,425	1,502	25,792	42,598,210	1,652	27,218	50,622,928	1,860
Services & Misc.(Incl. Agric.)	15,069	24,688,689	1,638	14,614	25,944,730	1,775	14,130	26,318,370	1,863
Totals & Averages	95,311	\$ 192,520,700	\$ 2,020	87,746	\$ 184,876,114	\$ 2,107	83,681	\$ 183,944,652	\$ 2,198

ARIZONA COVERED EMPLOYEES AND WAGE PAYMENTS BY MAJOR INDUSTRIES (continued)

By Years 1940 - 1951 Incl.

Source: Arizona Employment Security Commission

Industry	Average No. of Employees	1946		Average No. of Employees	1947		Average No. of Employees	1948	
		Wage Payments	Average Annual Wage		Wage Payments	Average Annual Wage		Wage Payments	Average Annual Wage
Copper Mining Only	9,678	\$ 27,096,626	\$ 2,800	11,340	\$ 36,365,277	\$ 3,207	11,493	\$ 41,318,524	\$ 3,595
All Mining & Quarrying	10,856	30,158,640	2,778	12,724	40,186,847	3,158	13,238	46,741,347	3,531
Smelting	1,018	2,893,709	2,843	1,376	4,251,314	3,090	2,778	8,675,549	3,123
All Mining, Quarrying & Smelting	11,874	33,052,349	2,784	14,100	44,438,161	3,152	16,016	55,416,896	3,460
Manufacturing (other than smelting)	10,912	26,769,070	2,453	12,563	34,522,325	2,748	11,808	35,986,521	3,048
Construction	8,582	23,462,722	2,734	10,747	31,977,603	2,975	12,385	41,667,349	3,364
Transport. & Pub. Utilities	8,775	21,266,906	2,424	9,953	25,867,424	2,599	10,886	31,079,988	2,855
Wholesale & Retail Trade	31,563	69,284,220	2,195	35,568	85,883,308	2,415	37,198	95,655,263	2,572
Services & Misc. (Incl. Agric.)	16,549	34,667,979	2,095	18,152	40,082,872	2,208	18,947	44,453,587	2,346
Totals & Averages	88,255	\$ 208,503,246	\$ 2,363	101,083	\$ 262,771,693	\$ 2,600	107,240	\$ 304,259,604	\$ 2,837

Industry	Average No. of Employees	1949		Average No. of Employees	1950		Average No. of Employees	1951	
		Wage Payments	Average Annual Wage		Wage Payments	Average Annual Wage		Wage Payments	Average Annual Wage
Copper Mining Only	11,001	\$ 40,612,224	\$ 3,692	10,181	\$ 41,994,322	\$ 4,125	10,754	\$ 47,825,698	\$ 4,447
All Mining & Quarrying	12,647	46,106,859	3,646	11,853	47,309,124	3,991	12,600	54,504,083	4,326
Smelting	2,582	8,357,505	3,237	2,586	9,191,991	3,555	3,046	11,763,653	3,862
All Mining, Quarrying & Smelting	15,229	54,464,364	3,576	14,439	56,501,115	3,913	15,646	66,267,736	4,235
Manufacturing (other than smelting)	11,308	34,463,659	3,048	12,043	38,424,335	3,191	14,996	52,728,149	3,516
Construction	9,399	32,629,525	3,472	11,153	41,106,636	3,686	12,775	51,789,225	4,054
Transport. & Pub. Utilities	10,750	32,899,419	3,060	10,503	34,102,380	3,247	11,698	40,417,858	3,455
Wholesale & Retail Trade	35,873	94,212,010	2,626	37,841	102,163,615	2,700	41,316	118,864,726	2,877
Services & Misc. (Incl. Agric.)	18,645	44,677,421	2,396	21,264	51,608,917	2,427	24,937	72,021,402	2,888
Totals & Averages	101,204	\$ 293,443,398	\$ 2,900	107,243	\$ 323,906,998	\$ 3,020	121,368	\$ 402,089,096	\$ 3,313

SUMMARY OF ARIZONA COVERED EMPLOYEES AND ANNUAL WAGES, BY MAJOR INDUSTRIES

Source: Arizona Employment Security Commission

Industry	1940		1941		1942	
	Average No. of Employees	Avg. Annual Wage	Average No. of Employees	Avg. Annual Wage	Average No. of Employees	Avg. Annual Wage
Copper Mining Only	N.A.	N.A.	N.A.	N.A.	13,073	\$ 2,341
All Mining & Quarrying	12,792	\$ 1,653	14,576	\$ 1,844	15,233	2,252
Smelting	1,529	1,510	1,542	1,712	1,735	2,000
All Mining, Quarrying & Smelting	14,321	1,638	16,118	1,831	16,968	2,226
Manufacturing (other than Smelting)	6,645	1,268	7,116	1,428	9,597	1,829
Construction	3,871	1,324	6,585	1,701	18,522	2,415
Transport. & Pub. Utilities	4,744	1,346	6,234	1,428	6,585	1,581
Wholesale & Retail Trade	21,476	1,164	22,577	1,291	23,394	1,381
Services & Misc. (Incl. Agric.)	9,252	1,110	10,213	1,270	12,741	1,173
TOTALS & AVERAGES	60,309	\$ 1,304	68,843	\$ 1,480	87,807	\$ 1,830

Industry	1943		1944		1945	
	Average No. of Employees	Avg. Annual Wage	Average No. of Employees	Avg. Annual Wage	Average No. of Employees	Avg. Annual Wage
Copper Mining Only	13,656	\$ 2,558	11,349	\$ 2,523	8,930	\$ 2,570
All Mining & Quarrying	15,366	2,500	12,709	2,487	9,864	2,547
Smelting	3,081	2,134	3,336	2,402	3,034	2,441
All Mining, Quarrying & Smelting	18,447	2,439	16,045	2,470	12,898	2,522
Manufacturing (other than smelting)	15,791	2,236	19,423	2,536	16,723	2,597
Construction	13,432	2,706	5,101	2,696	5,590	2,737
Transport. & Pub. Utilities	6,955	1,828	6,771	2,024	7,122	2,212
Wholesale & Retail Trade	25,617	1,502	25,792	1,652	27,218	1,860
Services & Misc. (Incl. Agric.)	15,069	1,638	14,614	1,775	14,130	1,863
TOTALS & AVERAGES	95,311	\$ 2,020	87,746	\$ 2,107	83,681	\$ 2,198

SUMMARY OF ARIZONA COVERED EMPLOYEES AND ANNUAL WAGES, BY MAJOR INDUSTRIES (continued)

Source: Arizona Employment Security Commission

	1946		1947		1948	
	Average No. of Employees	Avg. Annual Wage	Average No. of Employees	Avg. Annual Wage	Average No. of Employees	Avg. Annual Wage
Copper Mining Only	9,678	\$ 2,800	11,340	\$ 3,207	11,493	\$ 3,595
All Mining & Quarrying	10,856	2,778	12,724	3,158	13,238	3,531
Smelting	1,018	2,843	1,376	3,090	2,778	3,123
All Mining, Quarrying & Smelting	11,874	2,784	14,100	3,152	16,016	3,460
Manufacturing (other than Smelting)	10,912	2,453	12,563	2,748	11,808	3,048
Construction	8,582	2,734	10,747	2,975	12,385	3,364
Transport. & Pub. Utilities	8,775	2,424	9,953	2,599	10,886	2,855
Wholesale & Retail Trade	31,563	2,195	35,568	2,415	37,198	2,572
Services & Misc. (Incl. Agric.)	16,549	2,095	18,152	2,208	18,947	2,346
TOTALS & AVERAGES	88,255	2,363	101,063	2,600	107,240	2,837

	1949		1950		1951	
	Average No. of Employees	Avg. Annual Wage	Average No. of Employees	Avg. Annual Wage	Average No. of Employees	Avg. Annual Wage
Copper Mining Only	11,001	\$ 3,692	10,181	\$ 4,125	10,754	\$ 4,447
All Mining & Quarrying	12,647	3,646	11,853	3,991	12,600	4,326
Smelting	2,582	3,237	2,586	3,555	3,046	3,862
All Mining, Quarrying & Smelting	15,229	3,576	14,439	3,913	15,646	4,235
Manufacturing (other than Smelting)	11,308	3,048	12,043	3,191	14,996	3,516
Construction	9,399	3,472	11,153	3,686	12,775	4,054
Transport. & Pub. Utilities	10,750	3,060	10,503	3,247	11,698	3,455
Wholesale & Retail Trade	35,873	2,626	37,841	2,700	41,316	2,877
Services & Misc. (Incl. Agric.)	18,645	2,396	21,264	2,427	24,937	2,888
TOTALS & AVERAGES	101,204	\$ 2,900	107,243	\$ 3,020	121,368	\$ 3,313

Arizona Department of Mineral Resources
September, 1952

TONS ORE MINED, OPEN-PIT ORE TONNAGE, TONS OF COPPER, LEAD AND ZINC PRODUCED

1940 - 1951 INCLUSIVE

Source: U. S. B. M. Minerals Yearbook

<u>Year</u>	<u>Total Tons Ore Mined</u>	<u>Tons Ore Mined by Open Pit</u>	<u>No. of Open Pit Mines</u>	<u>% of Total Tons Mined by Open Pit</u>	<u>Tons Copper Produced</u>	<u>Tons Lead Produced</u>	<u>Tons Zinc Produced</u>
1940	21,572,175	6,443,980	1	29.87 %	281,169	13,266	15,456
1941	25,491,794	7,682,444	1	30.14 %	326,317	15,638	16,493
1942	33,920,731	16,018,633	2	47.22 %	393,387	14,772	18,522
1943	36,630,788	20,323,219	3	55.48 %	403,181	13,727	19,677
1944	35,900,641	21,830,919	3	60.81 %	358,303	16,707	29,077
1945	31,266,904	19,872,867	3	63.56 %	287,203	22,867	40,226
1946	31,058,179	20,052,078	3	64.56 %	289,223	23,930	43,665
1947	38,636,280	25,861,211	3	66.94 %	366,218	28,566	54,644
1948	39,925,686	29,638,873	5	74.23 %	375,121	29,899	54,478
1949	38,372,879	29,082,243	5	75.79 %	359,010	33,568	70,658
1950	42,709,272	33,358,059	6	78.10 %	403,301	26,383	60,480
1951	43,820,353	34,839,237	6	79.50 %	415,870	17,394	52,999

Arizona Department of Mineral Resources

September - 1952

PRODUCT PER MAN COMPARISON FOR YEARS 1940 AND 1951, ARIZONA MINES.

<u>Year</u>	<u>Total Tons Ore Mined</u>	<u>Tons Mined by Open Pits</u>	<u>Tons Copper Produced</u>	<u>Tons Lead Produced</u>	<u>Tons Zinc Produced</u>	<u>Total Tons Metal Produced</u>
1940	21,572,175	6,443,980	281,169	13,266	15,456	309,891
1951	43,820,353	34,839,237	415,870	17,394	52,999	486,263

Value of all Metal Produced in 1940 - \$82,167,759; in 1951 - \$235,289,045
 No. of all Mining & Smelting Employees in 1940 - 14,321; in 1951 - 15,646

Tons Ore per Man in 1940 1,506
 Tons Ore per Man in 1951 2,801
 % Increase in tons ore per man for 1951 over 1940 - 86.
 Tons Metal (Copper, Lead, Zinc) per man in 1940 21.64
 Tons Metal (Copper, Lead, Zinc) per man in 1951 31.08
 % Increase in tons metal per man for 1951 over 1940 - 44.
 Value of all Metal products per man in 1940 \$ 5,738
 Value of all Metal products per man in 1951 \$15,038
 % Increase in value of product per man for 1951 over 1940 - 162.

AJO OPEN-PIT MINING IN 1940 AND 1951

Product Per Man Comparison

<u>Year</u>	<u>Tons Ore Mined</u>	<u>Tons Waste Mined</u>	<u>Total Tons Ore & Waste</u>	<u>Tons Copper</u>	<u>Value of Metal Produced</u>	<u>No. of Employees</u>
1940	6,438,740	6,491,333	12,930,073	51,565	13,028,132	1,090
1951	9,164,309	9,140,342	18,304,651	63,093	32,116,063	1,231

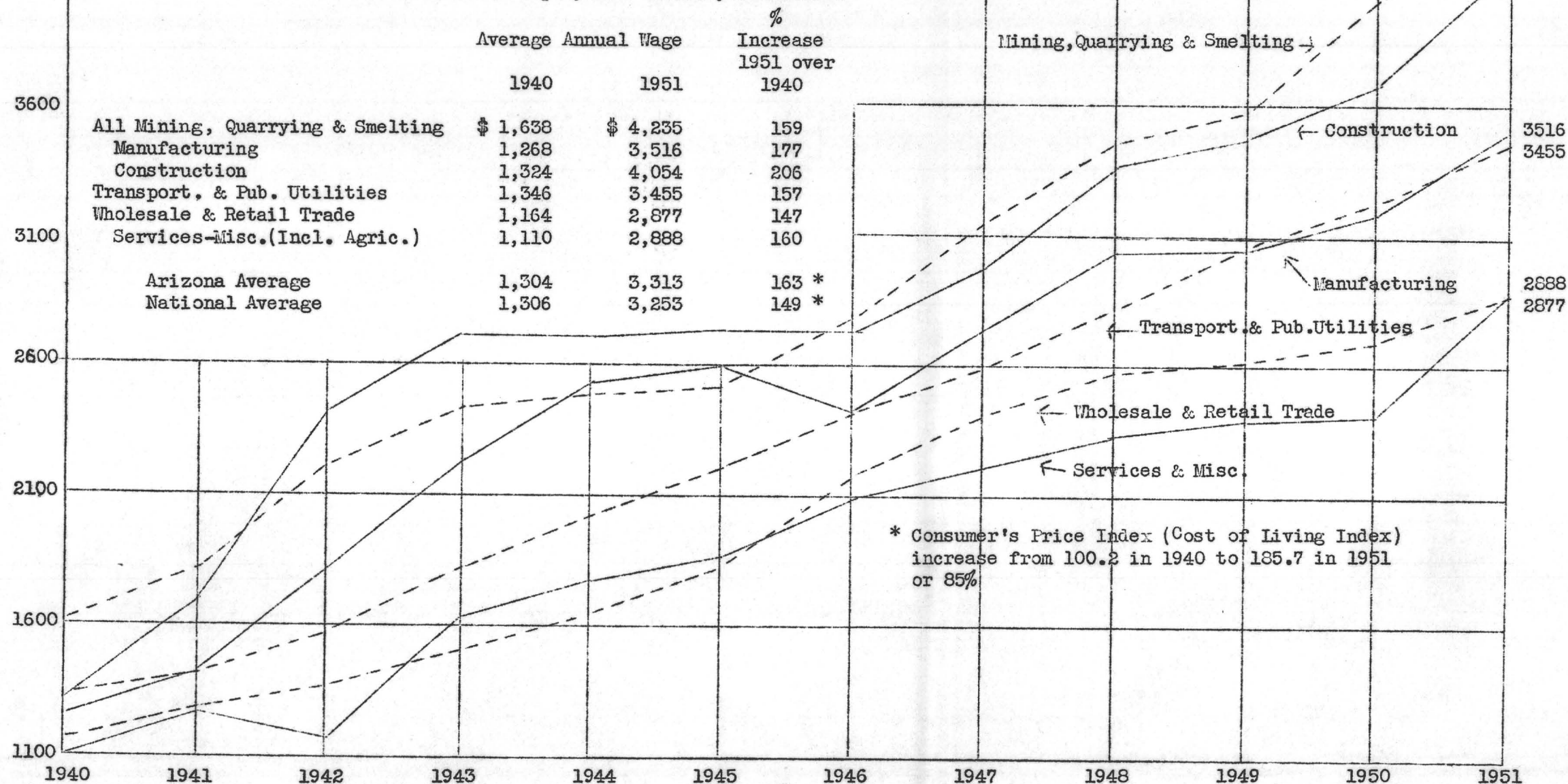
Tons Ore per man in 1940 5,907
 Tons Ore per man in 1951 7,445
 % Increase in tons ore per man for 1951 over 1940 - 26.
 Tons Ore & Waste per man in 1940 11,862
 Tons Ore & Waste per man in 1951 14,870
 % Increase in tons ore & Waste per man for 1951 over 1940 - 25.
 Tons Copper per man in 1940 47.31
 Tons Copper per man in 1951 51.25
 % Increase in tons copper per man for 1951 over 1940 - 8.
 Value of all metal products per man in 1940 \$ 11,952
 Value of all metal products per man in 1951 26,089
 % Increase in Metal value per man for 1951 over 1940 - 118.

Arizona Department of Mineral Resources

September, 1952

GRAPH SHOWING HOW ANNUAL WAGE RATES HAVE RISEN IN THE MAJOR INDUSTRIES

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



ARIZONA DEPARTMENT OF MINERAL RESOURCES

Discussion of Preceding Tables and Graph Showing Annual Wages of Arizona Covered Employees 1940 - 1951 Inclusive

A study of the tables compiled by this Department from the reports of the Arizona Employment Security Commission on employment and annual wages, shows that, except for the War years, the employees of the mining and smelting industry have been the highest paid in the State. During the War, the construction and manufacturing industries, engaged in war business, enjoyed the highest wages.

In 1951, Arizona Copper Mining, taken separately from the combined mining, quarrying and smelting business, paid an average annual wage of \$4,447, as compared with the National average, for all industries, of \$3,253.*

The graph and accompanying table shown on page 7 of this report, indicate that the employees in the mining, quarrying and smelting industry have enjoyed an increase in annual wage of 159% for 1951 over 1940, while the commodity price index (cost of living index) increased about 85%.

An attempt to compare the increased wages with an increase in product per man is met with too many misleading figures to be of much value. For example, in the mining industry, if the tonnage of copper, lead and zinc produced per man is used, we get an increase of approximately 44 percent in the 12 year period, while the tons of ore produced per man increased 86%. The difference was due to lower grade ores being mined in 1951 as compared with 1940. The miner can hardly be responsible for the ore containing less metal. Likewise, in mining some of the ore, a large tonnage of waste had to be handled, and if the miner is given credit for this tonnage, his product per man would greatly increase. However, this increased tonnage (of ore and waste) should more accurately be credited to the use of mechanical shovels in open-pit mining. The proportion of open-pit ore tonnage to total ore tonnage has increased from 30% in 1940 to 80% in 1951. There was only one large open-pit mine (Ajo) operating in 1940; whereas there were six in 1951 (Ajo, Morenci, Castle Dome, Bagdad, Inspiration and Ray).

Perhaps Ajo would be the best measure of the change in the product per man for the 12-year period, as it was operated as an open-pit mine throughout the period. In 1940, Ajo mined 6,438,740 tons of ore and 6,491,333 tons of waste, with an average of 1090 men on its payroll. In 1951, it mined 9,164,309 tons of ore and 9,140,342 tons of waste, with an average of 1231 men (not including men on the new smelter, which was not built until 1950). The tons of ore and waste produced per man at Ajo therefore showed an increase of 25% in 1951 over 1940, and much of this increase could have been due to mechanical improvements in open-pit mining.

The use of the value of the metal produced in calculating the output per man is also misleading, as here again the miner has no responsibility for the changes in price of the metal. At Ajo, this value increased 118% as compared with a general mining wage increase of 159% and a general cost of living increase of 85%.

Regardless of which method may be used in comparing the product per man with his increase in wages, the latter is seen to be higher in all cases.

* From the "Survey of Current Business" published by U. S. Dept. of Commerce.