

COPPER PRODUCTION IN ARIZONA AND THE UNITED STATES

Discussion by: The Arizona Department of Mineral Resources

The United States Bureau of Mines reported, on June 4, 1955, that this country no longer can produce all the copper it needs, and the Bureau of Mines gives industrial growth and an ever-burgeoning economy as the reasons for the failure of domestic mines to meet the demand for their product.

As a matter of fact this country has failed to meet the domestic demand since the years of the "Great Depression". The failure coincided with (1) the beginning of World War II, which created an abnormal demand for copper, and (2) the coming-in of South African production.

Before World War II, the United States had existing capacity to produce all the copper it could possibly need for peace-time uses. Hence there was no call for development of new ore-bodies to take care of normal industrial increase in consumption. In thirty years, only one new producer of size (the Morenci) was developed, and it took over twelve years (from 1929 to 1942) to bring it into production. The war created an enormous demand for copper, and the Morenci production came in just the right time to help meet the demand. A normal domestic consumption of around eight hundred thousand tons of copper was increased to over sixteen hundred thousand tons annually, and of course the domestic mines could not possibly meet this demand. Hence foreign production was called upon to help. The large high-grade ore deposits of South Africa were given great impetus by this abnormal demand, and they thereby gained a solid foothold in our domestic economy.

It became evident toward the close of World War II that to meet even a normal increase in industrial demand for the red metal, new ore-bodies would have to be developed and exploited. In addition, a sizeable amount would have to be produced for stockpiles and for cold-war preparedness. It takes from four to as much as twelve years to bring a good-sized mine into production, and it wasn't until late in 1953 that the first of these new mines was producing. Yerington, Nevada, an Anaconda property, was the first new producer. Although it actually started in

November, 1953, it did not reach its planned production rate of 33,000 tons, annually, until 1954. Four other new large operations reached the production stage in 1954. The Silver Bell mine in Pima County, Arizona, an A. S. & R. Co. property, started in April, and is expected to produce at the rate of 18,000 tons annually. The Bisbee East (Lavender Pit) mine, in Cochise County, Arizona, a Phelps Dodge property, started in July, and is expected to produce 38,000 tons of copper, annually. The Copper Cities, in Gila County, owned by the Miami Copper Co., also began production in 1954, but it replaced the Castle Dome mine which was exhausted in 1953. These three Arizona properties are open-pit mines. The fourth large mine to come into production was the White Pine, in Michigan, an underground mine. It started in October, 1954, and is expected to produce 36,000 tons of copper, annually.

The "Greater Butte Project" of the Anaconda Copper Mining Company, Butte, Montana, initially in production in 1952, was scheduled to attain an annual rate of 45,000 tons of copper by the end of 1954, or a little later. It is an underground operation, employing the cheap caving system of mining used on large low-grade ore deposits.

The San Manuel underground mine, in Pinal County, Arizona, owned by the Magma Copper Co., is not to reach the production stage before the end of 1956, when an annual rate of 70,000 tons is anticipated. The Magma Company first became interested in this property in 1944, hence it will have required twelve years for development.

New production in 1954 did not have the effect of increasing total production for that year over preceding years because of strike shut-downs in the latter half of the year, and curtailment due to decreased demand in the early part of the year. However, the first half of 1955 is showing the full effect, and both production and consumption indicate record-breaking proportions, barring labor trouble or other unforeseen developments.

Relation Of Arizona and U.S. Mine Production Of Copper To Domestic Consumption

The average annual rate of new copper production and consumption for the last five years may be summarized as follows:

| <u>Arizona Production</u> | <u>U. S. Production</u> | <u>U. S. Consumption</u> | <u>Arizona % of U.S. Production</u> | <u>U.S. Production % of U.S. Consumption</u> |
|-------------------------------|-----------------------------|------------------------------|---|--|
| 398,000 | 905,000 | 1,357,000 | 44.0 | 66.7 |

New mine production in 1955, together with increased capacity production from the old mines, indicates that Arizona should produce 480,000 tons of copper, and all United States mines should come up with 1,060,000 tons. Consumption for the first four months indicates the year's domestic consumption of 1,500,000 tons. Arizona should thus produce 45.3% of total U. S. production, which in turn would be 70.7% of domestic consumption.

Projecting into 1957, when San Manuel's 70,000 ton production should have its full effect, Arizona's production should be 550,000 tons, which would be 47.9% of the total U. S. mine production of 1,150,000 tons. And with a normal increase in domestic consumption to 1,600,000 tons, the United States should produce 72.0%.

All of this is based on continued good business conditions, but in any event, so long as the United States continues to produce at least two-thirds of its annual domestic consumption, the condition of Arizona and U. S. copper mines will continue to be satisfactory. When the United States begins to import more than one-third of its copper requirements, it will behoove the U. S. copper mines to maintain a vigilant watch over the country's imports, else they will be in the position of the lead-zinc industry in 1952 and 1953 when this country was flooded with lead and zinc imports.