

The Mineral Industry of Burma

By J. M. West¹



ALTHOUGH long considered a rich mineral region, Burma remained only a small producer in 1964, with its mineral industry output worth on the order of \$45 million,² slightly less than that of neighboring Thailand. Oil was the mainstay, but even that fell short of supplying domestic energy demands. Oil production, dropping in 1964, could not keep pace with consumption, and the lack of new discoveries made the outlook discouraging. The future for base metals and tin-tungsten mining was somewhat poorer, because efficient extraction had been abandoned for highgrading practices, thus hastening early depletion. Compared with agriculture, minerals had a small place in the economy, but contributed about 3.5 percent to the gross national product. Several thousand of the country's 24 million people were involved in mineral extraction, with facilities concentrated at only a few sites.

Oil exploration was stepped up in 1964, largely with Rumanian help; expanded operations at the Syriam refinery made crude imports necessary, indicating the shortcomings in domestic supply. Burma Railways' dieselization was nearly complete, reducing demand for imported coal but increasing diesel oil requirements. A tender was issued for construction of a Government fertilizer plant; meanwhile drilling to find adequate natural gas for the proposed plant proceeded in the Chauk area. Burma Corp., the big nonferrous metal producer, was seeking exemptions from taxation and stringent Government controls. Surveys at the company's Bawdwin mines had disclosed large tonnages of lower grade multimetal ores, and plans were being made to expand output. The Mawchi tin-tungsten mines and Kalewa coal mines were small-scale developments in progress, and a large iron deposit near Pangpet was being studied. Gem mining was hard hit by insurgency. To stimulate the gem trade, the Government tried to take the traditional role of Hong Kong dealers in jade purchases but with little success. Offerings under Government supervised sales at the Rangoon Gem Fair in December fell short as producers balked at the new controls.

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² Where necessary, values have been converted from kyats (K) at the rate of K4.72 equals US\$1.00.

GOVERNMENT POLICIES AND PROGRAMS

Main attention was given to socialization and nationalization by the military dominated Government in 1964, its third year of control. The Government took a tighter grip on trade by placing all exports under control of the nationalized Myanma Export-Import Corp.; this agency also was scheduled in June to take over licensing of jade and gem mines. All industrial supplies were handled by People's Stores Corp. through its Industrial Raw Material Distribution Committee. Foreign loans and technical surveys were welcomed; however, foreign private investment was not encouraged. In January 1964 the Foreign Capital Assistance Supervisory Committee was set up to manage allocation and utilization of incoming aid grants and loans. Generally such funds were from East European and United Nations sources. Petroleum and Mineral Development Corp. (PMDC), which includes the agencies formerly concerned with mining, by yearend held virtual complete control over mineral production and marketing. People's Oil Industry (POI), formerly Burma Oil Corp., was set up apparently as a subordinate organization to PMDC for handling activities in the petroleum sector. Colonel Than Sein, appointed late in 1963, held the post of Minister of Industry, Mines, and Labor.

PRODUCTION ³

The mineral industry's 1964 contribution of an estimated \$45 million to Burma's economy was about the same as in 1963. Incomplete data for the year indicated that output levels for most minerals were declining, but because of better world metal prices, overall value was expected to show little change. Petroleum and natural gas accounted for slightly over half of the value; nonferrous base metals and tungsten, basically export commodities, made up about one-fourth. Production and transportation in some areas were hampered by insurgent activities. Lead-zinc-silver output from the Bawdwin mines appeared to be on an upturn despite growing fear about impending Government takeover. Cement output was stable; the single plant at Thayetmyo operated at capacity. About three-fourths of the total mineral output value was accounted for in domestic consumption.

³ The Revolutionary Government of the Union of Burma, Central Statistical and Economics Department (Rangoon, Burma). Selected Monthly Economic Indicators. September and October 1964, 23 pp.

TABLE 1.—Burma: Production of metals and minerals

(Metric tons unless otherwise specified)

| Commodity | 1960 | 1961 | 1962 | 1963 | 1964 |
|---|--------------|---------------------|------------------|--------------------|---------------------------|
| Metals: | | | | | |
| Antimonial lead (18 to 20 percent antimony) ¹ | 539 | 413 | 459 | 578 | ² 236 |
| Antimony ore (40 to 50 percent antimony)..... | 212 | 151 | 68 | NA | NA |
| Copper matte (40 percent copper) ¹ | 365 | 279 | 370 | NA | ² 155 |
| Gold, refined..... troy ounces.. | 304 | 194 | ² 200 | ² 200 | ² 200 |
| Iron and steel: | | | | | |
| Iron ore..... | 15,922 | ² 15,000 | 9,162 | NA | NA |
| Steel ingot..... | 5,000 | 11,000 | 13,000 | 15,000 | 15,000 |
| Rolled steel..... | 4,000 | 8,000 | 10,000 | 12,000 | 12,000 |
| Lead: | | | | | |
| Concentrate (50 to 60 percent lead) ¹ | 32,107 | 29,007 | 33,449 | 32,936 | ² 15,740 |
| Refined metal (99.99 percent lead) ¹ | 16,782 | 15,763 | 17,385 | 17,738 | 18,053 |
| Manganese ore..... | 294 | 178 | 193 | ² 200 | NA |
| Nickel speiss (20 to 22 percent nickel)..... | 332 | 650 | 536 | 462 | ² 147 |
| Silver, refined ¹ thousand troy ounces.. | 1,501 | 1,325 | 1,498 | 1,511 | ² 672 |
| Tin concentrate (68 to 72 percent tin)..... long tons.. | 1,043 | 1,030 | 909 | 795 | ² 458 |
| Tin-tungsten concentrate (35 percent tin and 30 percent tungsten trioxide)..... long tons.. | 1,122 | 1,222 | 1,161 | 1,279 | ² 425 |
| Tungsten concentrate (55 to 65 percent tungsten trioxide)..... | 354 | 378 | 215 | 89 | ² 40 |
| Zinc concentrate (54 to 56 percent zinc) ¹ | 18,028 | 13,122 | 15,119 | 15,224 | ² 8,023 |
| Nonmetals: ⁴ | | | | | |
| Barite..... | 1,626 | 2,039 | 4,048 | NA | NA |
| Cement..... | 44,901 | 39,570 | 53,282 | 124,130 | 131,000 |
| Gypsum..... | 1,052 | 853 | 2,084 | NA | NA |
| Limestone..... | 40,000 | 36,065 | 65,289 | NA | NA |
| Marl..... | 24,016 | 23,171 | 26,293 | NA | NA |
| Salt..... | 148,181 | 126,544 | 155,697 | 160,700 | 127,000 |
| Mineral fuels: | | | | | |
| Coal..... | 114 | 1,611 | 2,423 | ² 5,000 | ² 8,000 |
| Natural gas..... million cubic feet.. | 261 | 333 | 440 | NA | NA |
| Petroleum: | | | | | |
| Crude oil..... thousand 42-gallon barrels.. | 4,078 | 4,218 | 4,366 | 4,761 | 4,277 |
| Refinery products: ⁵ | | | | | |
| Gasoline..... do..... | 1,250 | 1,312 | 1,292 | 1,238 | ² 937 |
| Kerosine..... do..... | 687 | 718 | 702 | 854 | ² 620 |
| Other..... do..... | 882 | 1,260 | 1,229 | 1,280 | ² 1,020 |
| Total..... do..... | 2,819 | 3,290 | 3,223 | 3,372 | ² 5,577 |

¹ Estimate. NA Not available.² Output of Burma Corp. (1951), Ltd. All figures tantamount to national production; however, other companies sporadically produce small quantities of lead, zinc, and silver.³ January-June.⁴ January-June.⁵ January-September (preliminary).⁶ Burma also produces a variety of semiprecious and precious stones, including amber, jade, ruby, sapphire, and spinel.⁷ 1960-61 figures are for fiscal years, October to September of subsequent year. For 1962 and 1963, residual fuel is apparently not included and "other" is comprised mainly of distillate fuel.TRADE ⁴

Among Burma's exports from October 1963 to June 1964 only minerals showed an increase, according to preliminary figures. Metal and ore exports for fiscal 1963-64 (October-September) indicated an approximate annual shipment value of \$10 million, equivalent to 3.5 percent of all exports, compared with 70 percent for rice. Once a petroleum exporter, Burma in 1964 was importing both crude and refinery products and exporting only the petroleum wax from refining. Exports of tin and tungsten ores and concentrates reportedly no longer moved through the Tenasserim ports of Tavoy and Mergui but instead through Rangoon.

Since nationalization of all incoming trade, imports except those for Government departments were handled by the People's Stores

⁴ Work cited in footnote 3.

TABLE 2.—Burma: Exports of metals and minerals
(Metric tons, unless otherwise specified)

| Commodity | 1962 | 1963 | Principal destinations, 1963 |
|--|--------|--------|---|
| Metals: | | | |
| Antimony ore..... | 240 | 22 | N.A. |
| Copper matte..... | 405 | 239 | Japan, West Germany. |
| Lead: | | | |
| Ore (galena)..... | 457 | 457 | All to Japan. |
| Metal: | | | |
| Antimonial lead..... | 336 | 494 | All to India. |
| Refined..... | 19,999 | 16,301 | Mainly to India. |
| Nickel speiss..... | | 423 | Japan. |
| Silver bullion..... thousand troy ounces.. | 1,401 | 1,251 | Mainly to United Kingdom. |
| Tin and tungsten: | | | |
| Tin ore and concentrate ¹ long tons.. | 1,885 | 2,267 | Mainly to Malaysia; also to United Kingdom. |
| Tungsten ore and concentrate..... | 417 | 2,376 | Mainly to Japan. |
| Mixed tin-tungsten concentrates..... long tons.. | 260 | 393 | Japan, United Kingdom, Netherlands. |
| Tin ingots..... long tons.. | 26 | | |
| Zinc: | | | |
| Ore and concentrate..... | 15,700 | 17,280 | Japan. |
| Ingot..... | | 50 | N.A. |
| Nonmetals: Salt..... | 9,380 | 10,000 | Virtually all to mainland China. |
| Mineral fuels: Petroleum wax..... | 10,896 | 11,202 | Mainly to United Kingdom. |

¹ Revised. * Estimate. N.A. Not available.

² Includes several tons of bismuth-bearing concentrates.

³ Incomplete. Exports from ports of Tavoy and Mergui, near the main tin-tungsten area, are not available.

TABLE 3.—Burma: Imports of metals and minerals
(Metric tons, unless otherwise specified)

| Commodity | 1962 | Principal sources |
|--|--------|--|
| Metals: Unwrought..... | 464 | Canada 435. |
| Aluminum: Semimanufactures..... | 2,750 | Mainland China 1,660 ¹ ; Japan 320. |
| Copper semimanufactures..... | 530 | Belgium 154; U.S.S.R. 131. |
| Iron and steel semimanufactures: | | |
| Iron ingots..... | 2,140 | Australia 2,000. |
| Jolts..... | 5,220 | Belgium 1,710; U.S.S.R. 1,510; Japan 850. |
| Bars and rods..... | 37,000 | Japan 14,700; U.S.S.R. 9,620; Belgium 4,960; mainland China 3,010. |
| Uncoated plates and sheets..... | 8,050 | Japan 4,480; U.S.S.R. 1,580. |
| Galvanized and corrugated sheets..... | 19,600 | Japan 12,000; Australia 6,270. |
| Tinplate..... | 9,870 | Japan 8,640. |
| Wire..... | 4,430 | Mainland China 1,600; Japan 1,045; U.S.S.R. 705. |
| Tube and fittings..... | 9,605 | United Kingdom 6,020; Japan 1,780. |
| Large pipes..... | 3,860 | Japan 2,880; mainland China 254. |
| Zinc semimanufactures..... | 514 | Australia 330; Belgium 79. |
| Nonmetals: | | |
| Asbestos..... | 500 | Republic of South Africa 260; Canada 240. |
| Cement..... thousand tons.. | 130 | Mainland China 56; United Arab Republic (Egypt) 17; Japan 14. |
| Fuller's earth..... | 995 | India 540. |
| Phosphate fertilizer..... | 6,900 | Japan 6,790. |
| Sulfur..... | 1,490 | United States 1,400. |
| Mineral fuels: | | |
| Coal..... thousand tons.. | 330 | Republic of South Africa 284. |
| Coal coke..... | 1,160 | All from Republic of South Africa. |
| Petroleum: | | |
| Gasoline..... thousand 42-gallon barrels.. | 123 | Iran 79; U.S.S.R. 44. |
| Kerosine..... do..... | 123 | Mainly from U.S.S.R. |
| Medium flash diesel oil..... do..... | 104 | Mainly from U.S.S.R. |
| High flash diesel oil..... do..... | 211 | U.S.S.R. 186; Iran 24. |
| Lubricants..... | 108 | United Kingdom 65; Netherlands 23. |
| Asphalt..... | 20,050 | Iran 13,340; Republic of South Africa 4,570. |

¹ Mostly aluminum circles.

Source: Official trade returns of Burma.

Corp. Values both of mineral and overall imports from October 1963 to June 1964 were below those of the corresponding 1962-63 period partly due to Government restraints. Roughly \$40 to \$50 million worth of mineral and related products was imported in 1964, principally metals and semimanufactures. Cement, coal, and oil imports were worth about \$0.5, \$3, and \$4 million, respectively in 1964.

COMMODITY REVIEW

METALS

Lead, Zinc, and Silver.—It was announced that Burma Corp., Ltd. (1951), the country's only important base metal producer, would become fully nationalized, effective January 18, 1965. The company, employing about 5,700 people, had been a 50-50 joint venture of the Government and Burma Mines, Ltd. (London), the latter 49 percent American-owned, with shares held by Morgan Guaranty Trust Company (New York). The Government complained that the company was mining only high-grade ores, leaving behind less profitable but economically mineable ores. The company claimed that exceptionally high tax rates had made it impossible for it to work the mine profitably. A commission was appointed to assess the value of Burma Corp. shares and determine stockholders' compensation.

During the corporate year ending June 30, 1964, Burma Corp., with its Bawdwin mines and Namtu smelter, treated 169,000 tons of ore, recovering 17,200 tons of refined lead, 15,600 tons of zinc concentrates, and 1.44 million fine ounces of silver.⁵ Although tonnage was only slightly higher than a year before, zinc recovery was almost 10 percent higher; lead and silver stayed about the same. Ore grade in the first half of 1964 was about 12.5 ounces per ton in silver, 15 percent lead, and 8 percent zinc. Insurgents continued to harass shipments from Namtu. During the 9 months ending June 30, an estimated surplus of \$212,000 was declared on Burma Corp. gross revenues of \$6 million.

Results from a Burmese and United Nations Special Fund study indicated Bawdwin mine reserves could keep operations going at least another 20 years; it was suggested that earnings could be doubled with adequate investment, which could lower production costs per ton from \$35 to between \$10 and \$15. A U.N. team was asked to advise on establishing a modern lead-zinc smelter.

Iron and Steel.—Proposals to build an integrated iron and steel plant were reinforced by a West German survey that disclosed deposits near Pangpet, Shan State, containing 10 million tons of ore averaging 56.4 percent iron and 59 million tons averaging 42.6 percent iron. Small deposits at Kawloikaw, near Taunggyi, at Inga, near Maymo, and on Mah Putch Island, near Mergui, were considered inferior. Possibilities for steel production were linked with the Kalewa subbituminous coalfield, with estimated reserves of some 128 million tons of coal.

Steel demand in 1964 centered on galvanized sheets, a large share of which were imported from Japan. The Ywama, Insein, electric steel plant produced rolled and wire products from dwindling do-

⁵ Company reports through quarter ended June 30, 1964.

mestic scrap supplies. Annual capacity was 20,000 tons of ingots, 40,000 tons of rolled products, and 8,000 tons of galvanized sheets. Expansion was planned or underway, and an international tender was placed for galvanizing facilities totaling 60,000 tons annual capacity.

Tin and Tungsten.—PMDC's rehabilitation program to boost tin-tungsten production at the once famous Mawchi mines, in southern Shan State, from about 30 to 100 tons of ore per month appeared to be making headway; output in fiscal year 1963-64 was estimated at 550 metric tons of mixed concentrates. Earlier in 1963, the Government had acquired Anglo-Burma Tin Co., Ltd's., remaining 49 percent share in the operations. The Yawa (Yawa Tin Lode Mine Co.) and the Kyaukmedaung (Tenasserim Mining Co.) tin mines were nationalized in early 1964. Private mining was discouraged by supply problems and controls; 6 tin mines in the Mergui and Tavoy areas had stopped production, and active tungsten mines declined to about 30, one-third less than a year before. Although reports on mining output conflicted, tin and tungsten production appeared to be slowly improving.

MINERAL FUELS

Coal.—Burma's Kalewa coalfield, being developed as part of a 5-year plan (1963-68) under West German technical supervision, produced about 25 tons of coal per day. A coal cutting machine was purchased, and arrangements were made for installation. Output from development workings totaling 7,000 metric tons from October 1963 to July 1964 went to the Government Brick and Tile Factory and Burma Railways.

Petroleum.—Oil production, although on a rising trend until 1964, was only about half the pre-World War II rate, and crude imports were required in 1964 to meet expanded operational levels in refining. Refinery outputs in barrels daily were Syriam—20,000, Chauk—6,300, and Yenangyaung—1,700. A new crude distillation unit was opened at Syriam shortly before the first of the year, and the old section of the plant (about 6,000 barrels daily), was placed on standby. Domestic crude production was about 15 percent short of supplying the various products consumed; more diesel was especially needed. Refining produced an excess of paraffin for export. Indonesia supplied most of the additional crude imported to fill out refinery operations.

With Burma's oil reserves declining, the People's Oil Industry (POI), successor to Burma Oil Corp. (nationalized in 1963), was receiving Rumanian and Japanese exploration assistance. Several Rumanian drill rigs explored for gas in the Chauk area to provide for a proposed fertilizer plant. POI, completing its oil monopoly, nationalized five small private producer-distributors. Small strikes of oil and gas were made in the Inma area at depths of 3,340 and 11,540 feet; oil was found at Myanaung, near the Irrawaddy River, but minor flows were unsustainable. Deep drilling of shallow producing fields was under consideration. The Government failed to implement secondary recovery projects but increased exploration budgets. Burma Oil Corp.'s progress report series on oil activities was suspended after POI takeover.