RESOURCES

Importance of Tin to Defense Stressed in Minerals Yearbook

Despite All Efforts To Accumulate a Stockpile, Best Estimates Place Supply at Only Year's Needs

ONE reason for the tense interest with which the United States government is watching Japan's southward grabs is disclosed in the chapter on tin in the new *Minerals Yearbook,* which will be published this month by the U. S. Bureau of Mines. Despite all efforts to accumulate a stockpile of this vitally necessary metal, the most optimistic estimate sets the supply now on hand at only a little over a year's normal consumption. While increased imports from Bolivia and other parts of the world will help, there is nowhere near tin enough in sight wholly to replace the Indo-Malaysian supply should it be cut off.

Of the 169,500 long tons of tin used in the world last year, this country consumed nearly half—76,000 tons. Britain accounted for 32,000 tons, or nearly half of the remainder. This was substantially more than the combined tin utilization of the combined Axis powers, which totaled 26,500 tons. (The tons in these reckonings are long tons of 2,240 pounds, not the more familiar short ton of 2,000 pounds.)

Britain has long had a near-monopoly of tin smelting. In normal years about half of the world's supply has been smelted in British Malaya, and an additional quarter in the British Isles themselves. Most of the remaining fourth has been smelted in the Netherlands, the Netherlands Indies, and China.

It has never been considered economically advisable to set up tin smelters in the United States, because the finished product could be purchased abroad more cheaply than it could be produced from imported ore in this country. Now, however, with a war emergency staring us in the face, one smelter has been contracted for, to be built at Texas City, near Galveston. It will be government-owned, but operated under contract by an American affiliate of one of the larger Dutch firms. Its cost is to be $3,500,000, and its annual output 18,000 tons of refined tin.

Bolivia is the only important tin-producing country in the Western Hemisphere—which accounts, perhaps, for the recent determined efforts of Nazi agents to produce political turmoil there. The United States has contracted with several Bolivian mining concerns to purchase annually for the next five years sufficient ore to produce 18,000 tons of tin.

The war is having the effect of sending smelters to the mines, instead of shipping ore to smelters in the countries around the North Sea. Netherlands Indies ore, overtaxing the capacity of smelters on the spot, is at present being shipped to smelters in British Malaya, while additional plant capacity is being erected. Ore from the Belgian Congo, cut off from the homeland, is coming to the United States, but smelters are being erected in the Congo as well.

At present, the Axis powers are not known to be suffering from any tin shortage. Their tin consumption has always been more modest than that of the English-speaking nations, and in their rush over the Low Countries and northern France in the spring of 1940 they captured sufficient stocks to last for some time. In addition, Germany may have been receiving some East Indian tin via Japan and the USSR before the outbreak of the new Nazi-Soviet war. Since there are no significant bodies of tin ore anywhere in Europe or North Africa, the pinch may be felt in the Axis lands if the war lasts more than another year or so.

Suggestions that tin cans be collected and de-tinned are not received too optimistically by metallurgists. There are commercial de-tinning plants, but they operate mainly on the clean scrap from tinplate plants. Crushing and baling tin cans from city dumps is a marginal industry, practicable only when the price of tin is high, but perhaps justifiable in emergencies like the present.

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RESOURCES

Crude-Oil Reserves Reached New Peak on January 1, 1941

DESPITE the possible oil shortage in the eastern part of the country, on account of transportation difficulties, the crude-oil reserves of the United States, consisting of supplies "in sight or extractable by present methods and at approximately current prices reached a new peak on January 1, 1941."

This is revealed in the *Minerals Yearbook*. At the beginning of 1941, says the yearbook, quoting the American Petroleum Institute, the total reserve was 19,025,000,000 barrels, compared with 18,483,000,000 barrels a year before. At present rate of use, this is a 13-year supply. During 1940, 1,894,000,000 barrels of reserves were discovered and developed.

Summarizing world production, the report says:

"The estimated world production of crude petroleum in 1940 was 2,149 million barrels—a gain of 70 million or 3.4%. United States production rose from 61% of the world total in 1939 to 63% in 1940—a gain of 87 million barrels; production in the rest of the world declined 16 million barrels. Russia showed no substantial change, while output in Venezuela decreased 21 million barrels, in Iraq 5 million, and in Rumania 3 million. Colombian production gained 4 million. Increased exports of crude and refined oils to the United States from Caribbean countries partly offset the loss of their continental European markets and helped to maintain their crude output at a higher level than might have been expected.

"In the United States the new production of all oils increased by 91 million barrels, rising from 1,319 million in 1939 to 1,410 million in 1940. This output, however, exceeded demand, as indicated by an increase of 39 million barrels in the stocks of all oils compared to a decrease of 41 million in the stocks of all oils in 1939."

As usual, 1940 set a new record for domestic motor fuel demand, with 589,424,000 barrels, an increase of 6% over 1939. Even greater was the increase in fuel oil. (*Turn to page* 93)

INVENTION

Flashlights for Industry Built of Semi-Hard Rubber

FLASHLIGHTS for industrial use are built of semi-hard rubber, reinforced internally with brass parts, so that they can take hard punishment. One type, for use in explosive gaseous atmospheres, is so constructed that if the bulb breaks, a cold wire chills the filament instantly. *(Eveready Industrial Flashlights, National Carbon Co., New York City.)*

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"The demand for fuel oil in 1939—a record up to that time—was far surpassed in 1940," it is stated. "A gain in exports and a decline in imports of fuel oil in 1939 were just reversed in 1940 when, owing to adverse international trade conditions, exports dropped sharply below the record volume of 1939, while imports, because of an unusual demand for heating oils in the opening months of the year and an expanding industrial program, were double the quantity received from foreign sources in 1939. The running of more crude to stills and a greater percentage yield brought about increased production of fuel oil in 1940 compared with 1939. A downward trend in stocks in 1939, which resulted in a shrinkage of 12 million barrels in the fuel-oil inventory for that year, was checked in 1940 when 6 million barrels were added to storage."

The demand for paraffin wax also established a new record in 1940. In fact, states the *Yearbook*, "Coke was the only major product of petroleum for which the domestic demand was lower in 1940."

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ECOLOGY

NATURE RAMBLINGS by Frank Thone

Records of Healing

OLD PHOTOGRAPHS can be of value to botanists and foresters in studying the rate of new growth that heals up old scars left in the forests by fires long ago. Such a series, taken at intervals from 1872 to the present time, has been studied by Ronald L. Ives, former Science Service staff member, as a by-product of several geological field trips into the high country of Colorado.

One particular area was burned over during the Indian troubles of 1862-63. In a few places the soil itself was burned away, all the way down to bedrock.

In 1872 came the pioneer photographer, William H. Jackson, accompanying the Hayden geological expedition as official picture-maker. His photographs, still extant, show the dead trees bare and barkless, with grass growing among their trunks.

The next series of photographs was taken in 1878. The grass was then being crowded out by a dense growth of mixed shrubs. After that there was a lapse of 20 years during which there is no existing photographic record. For the decade 1898-1908, however, there are abundant photographic records, which show the shrubs yielding place to the next stage in succession, an aspen forest. Maximum density of the aspen was reached in 1915.

As early as 1900 new conifer growth was showing itself here and there, and by 1920 the evergreens were beginning to overtop the aspens in many locations. Photographs taken about 1920 show the evergreens beginning to assert dominance. In some locations they covered 40% of the area. By 1935, the evergreen percentage had risen to 65, and in 1940 dominance was complete, with only scattered patches of aspen here and there, where growing conditions had not been favorable for the conifers.

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