

BARIUM AND STRONTIUM.

By JAMES M. HILL.

BARIUM.

USES.

Barytes (barite or barium sulphate) is used chiefly in making mixed paints, in which white, ground, and water-floated barite is employed as a pigment. Ground barite is also used in the rubber industry and to some extent by the makers of heavy glazed paper and ink. Lithopone, a chemically prepared white pigment consisting of about 70 per cent barium sulphate and 30 per cent zinc sulphide, is one of the chief constituents of the "flat" wall paints so extensively used in office buildings and hospitals, replacing the less desirable paper and calcimine wall finishes.

Since the beginning of the war a barium chemical industry has been established in the United States to supply barium carbonate, nitrate, chloride, chlorate, hydrate, and binoxide, which were formerly imported largely from Germany. In 1915 this industry consumed 10 per cent of the output of domestic barite, but the consumption in 1916 was apparently somewhat larger. The barium chemicals have a wide variety of applications, perhaps the most important of which are the use of barium binoxide in the preparation of hydrogen peroxide, that of barium chloride as a water softener, and that of various salts in the manufacture of optical glass.

SUPPLY.

Barytes (or, as it is called in Missouri, tiff), as shown by a recent report of the United States Geological Survey,¹ is mined principally in the Southeastern States, particularly southeastern Missouri, northwestern Georgia, east-central Tennessee, central and western Kentucky, northeastern Alabama, southwestern North Carolina, northwestern South Carolina, and southwestern Virginia. The production of 108,547 short tons in 1915 was over twice as large as that of

¹ Hill, J. M., U. S. Geol. Survey Mineral Resources, 1915, pt. 2, pp. 161-187, 1916.

1914, and in 1916 the output was again doubled. The value of the 1916 output was over \$1,000,000—a figure never attained before. It is interesting to note that whereas Missouri has usually made a larger production than any other State, in 1916 Georgia mines produced nearly twice as much as Missouri mines. There are known deposits of barite in several of the Western States, and some of these deposits—notably in Colorado, Nevada, California, and Alaska—were mined during 1915 and 1916.

Prior to the war a considerable part of the crude barite used on the Atlantic seaboard was imported from Germany, chiefly because of the cheaper water transportation, with which the American producers could not compete. Since this supply has been shut off, although the domestic requirements have more than trebled, the domestic mines have supplied all the demands and appear to be capable of meeting all future requirements.

The only commercial deposit of witherite (barium carbonate) known to the Geological Survey in the United States is near El Portal, Mariposa County, Cal.

STRONTIUM.

USES.

Strontium salts, chiefly the nitrate, are employed to make “red fire,” which is of wide use at this time not only for signal lights on battle fronts but for railway signals to promote the safe handling of trains at night. It is estimated that prior to 1914 about 2,000 tons of strontium nitrate was used annually in the manufacture of such “flares” or “Costen” and “Bengal” lights and fireworks. Since 1915 the demand has increased considerably.

SUPPLIES.

Before the war celestite (strontium sulphate) and strontianite (strontium carbonate) were imported from Germany, England, and Sicily. During 1914 and 1915 English celestite was obtained by manufacturers, but late in 1915 the exportation of strontium ores was embargoed by England. Strontium ores are known in the United States, the principal commercial deposits being in southern California, Arizona, Washington, and Texas. The Texas and Washington ores can be mined so as to produce high-grade celestite, and some of the Arizona and California celestite is of excellent grade. Some of the deposits in Arizona and California, however, are mixed with barite and calcite, which detract from their value. One deposit in southern California, now being worked, consists of good-grade strontianite, which is particularly desirable, as it is directly soluble

in acid, whereas the sulphate must be roasted to sulphide before it is soluble.

Apparently United States manufacturers are now using domestic ores containing only 85 per cent of strontium sulphate, though they prefer not to use materials of lower grade than 92 per cent.

The United States Geological Survey has been instrumental in investigating and calling attention to available supplies and in bringing together, through correspondence and published information, the producers and consumers of barium and strontium ores.

