NON-METALLIC PRODUCTS OF CANADA.

A production of 30 tons of actinolite valued at $330 was reported in 1910; no returns of production being received for 1909.

Returns from three smelters in which arsenic is recovered give a production in 1910 of 1,502 tons valued at $75,328, as compared with 1,129 tons valued at $64,100 in 1909. There were also 547 tons of arsenical ore shipped in 1910, valued at $5,716, as compared with 224 tons valued at $3,346 in 1909. The exports of arsenic in 1910 were 2,256 tons valued at $173,932, and in 1909, 1,556 tons valued at $119,673. The imports of arsenious oxide, in 1910, were 260,415 pounds valued at $6,891, and of sulphate of arsenic 257,451 pounds valued at $8,946.

The shipments of asbestos in 1910 were 77,508 tons valued at $2,555,974, and of asbestic 24,707 tons valued at $17,629. The shipments in 1909 were 63,349 tons of asbestos valued at $2,284,587, and 23,951 tons of asbestic valued at $17,188. The shipments in 1910 consisted of 3,740 tons of crude asbestos valued at $664,508, and 73,768 tons of mill stock valued at $1,891,466. Considerable quantities of both crude and of mill stock were held in manufacturers hands at the close of the year. Exports in 1910 were 71,485 tons valued at $2,108,632, as against 56,971 tons valued at $1,729,857 in 1909. Imports and manufactures of asbestos in 1910 were valued at $230,489, and in 1909, $196,742.

Shipments of chromite in 1910 were reported as 299 tons valued at $3,734, as compared with shipments of 2,470 tons valued at $26,604 in 1909.

The total sales of grain corundum in 1910 were 1,870 tons valued at $198,680, as compared with sales in 1909 of 1,491 tons valued at $162,492.

Shipment increased from 12,783 tons valued at $40,383 in 1909, to 15,809 tons valued at $47,667 in 1910. The exports are recorded as 10,834 tons valued at $35,234 in 1909, and 15,601 tons valued at $47,962 in 1910.

A small production of fluorspar was reported in 1910, of which two tons valued at $15 were shipped from the mine. About 7,461 tons of fluorspar were used during the year in steel plants.

Shipments of crude and milled graphite during 1910 totalled 1,392 tons valued at $74,087, as against 864 tons valued at $47,800 shipped in 1909. The production of artificial graphite in 1910 was reported as 1,221 tons, as compared with 257 tons in 1909.

Exports of plumbago in 1910 are reported as 788 tons valued at $53,008, and manufactures of plumbago valued at $66,658. Exports in 1909 were: Plumbago, 1,004 tons valued at $52,440, and manufactures of plumbago valued at $864. Imports of graphite in 1910 were valued at $112,853 and included. plumbago not ground, $4,867; blacklead, $10,048; plumbago ground and manufactures of, $45,042; and crucibles of clay or plumbago, $52,896. In 1909 the imports were valued at $94,392, including: plumbago not ground, $5,075. blacklead, $11,638. plumbago ground and manufactures of, $37,538; and crucibles of clay or plumbago, $40,141.

The production of grindstones, scythestones, and wood pulp-stones in 1910 was 3,073 tons valued at $47,196, as compared with 4,275 tons valued at $54,664 in 1909. The exports in 1910 included: stone for the manufacture of grindstones, 308 tons valued at $338; and manufactured grindstones valued at $23,164; the exports in 1909 were: stone for the manufacture of grindstones, 125 tons valued at $1,685, and manufactured grindstones valued at $13,942. The imports of abrasives in 1910 included: grindstones valued at $71,394; burrstones, $854; emery in bulk crushed or ground, $40,400; manufactures of emery, carborundum, etc., $92,890; pumice stone, $14,829. The 1909 imports comprised: grindstones valued at $69,554; burrstones, $2,001; emery in bulk crushed or ground, $29,752; manufactures of, $66,777, and pumice stone, $11,291.

The total shipments of gypsum crude and calcined in 1910 were 525,246 tons valued at $934.446, as compared with shipments of 473,129 tons valued at $809,632 in 1909. The tonnage of gypsum mined or quarried in 1910 was 548,019 tons, and the quantity calcined, 69,889 tons. In 1909, 493,086 tons of gypsum were mined and 63,670 tons calcined. The shipments in 1910 included: crude gypsum, 469,573 tons valued at $508,686; ground gypsum, 6,121 tons valued at $17,390, and calcined gypsum 49,552 tons valued at $408,370. In 1909 shipments comprised: crude gypsum, 423,474 tons valued at $457,038; ground gypsum, 8,814 tons valued at $26,159, and calcined gypsum, 40,841 tons valued at $326,435. The exports of gypsum in 1910 were: 346,081 tons of crude gypsum valued at $416,725, and gypsum ground or calcined valued at $12,306. The 1909 exports were: 315,201 tons of crude gypsum valued at $372,286, and gypsum ground or calcined valued at $2,787.

The imports of gypsum in 1910 were valued at $169,798, including: crude gypsum, 12,271 tons valued at $21,073; ground gypsum, 6,690 tons valued at $13,242, and plaster of Paris, 19,045 tons valued at $135,483. The total value of imports in 1909 was $141,715, made up of: crude gypsum 3,958 tons, valued at $12,507; ground gypsum, 10,737 tons valued at $16,779, and plaster of Paris, 19,116 tons valued at $112,429.

Shipments of magnesite in 1910 were 323 tons valued at $2,160, and in 1909, 330 tons valued at $2,508.

The value of the mica production in 1910 as reported by mine operators was $190,385, as compared with $147,782 in 1909. The exports of mica in 1910 were 937,263 pounds valued at $330,903, as against 717,066 pounds valued at $256,834 in 1909.

Shipments of barytes in 1909 were 179 tons valued at $1,120, and no production was reported in 1910. The production of iron ochres in 1910 was 4,813 tons valued at $33,185, as compared with 3,940 tons valued at $28,093 in 1909.

The export of iron oxides in 1910 were 1,746 tons valued at $29,839, as against 658 tons valued at $7,956 in 1909. The imports in 1910 were: ochres and ochrey earth and raw siennas, 1,246 tons valued at $31,926; and oxides, dry fillers, fireproof umbers, and burnt siennas, 868 tons, valued at $23,467. The total imports in 1909 were valued at $39,497.

FERTILIZATION BY SEWAGE.

An investigation by Muntz and Massie in Paris, has shown that a permanent meadow yielding 4½ tons of hay per acre requires 120,000 cubic feet of sewage for phosphoric acid and 150,000 for potash; and that by irrigating with 150,000 to 175,000 cubic feet, given in eight or ten instalments during the growing season, the crops have sufficient for both water and nutritive material. Some land receives ten times this quantity.

COMPRESSION TEST FOR STONE BALLAST.

The committee on ballast of the American Railway Engineering Association has presented in its report for 1912 a compression test which the Office of Public Roads on the Department of Agriculture has agreed to make. The compression test is described in the report of the committee as follows:

A cylinder 2 in. in diameter and more than 2 in. long is drilled from the specimen of stone to be tested, by means of a diamond core drill, and sawed to a length of 2 in. by a band saw fed with emery. The specimen is finally faced off on each end by means of a power-driven grinding lap, on which water and emery are continuously fed.

The cylinder then has both ends embedded in plaster of paris, the bed being made as thin as possible and both ends being made parallel. The cylinder is next mounted on an Olsen test machine on a special bearing block between blotting papers, three thicknesses being placed at each end, between the cylinder and the steel-bearing faces of the machine. The load is then applied at a speed of 0.152 in. per minute, the machine being kept balanced during the application of the load.

The committee believes that with the former physical tests of stone for ballast and the compression test added, sufficient information will be given by which to compare the character of stone from various quarries from which it is proposed to obtain ballast.

The advantage of using approved physical tests of stone for ballast is pointed out to be the determination of the character of the stone and its fitness for ballast without the expense of opening quarries and of using the stone before it is known whether it will be suitable for ballast or not.