

vises the administration and operation of the Panama Canal and the operation of the Inland Waterways Corporation. The War Department also continues its administrative functions with the Civilian Conservation Corps.

For the support of the War Department during the fiscal year ending 30 June 1939, Congress appropriated \$719,484,989, of which sum \$492,896,735 is for military activities.

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ART. See PAINTING AND SCULPTURE.

ASBESTOS. The output of asbestos from United States mines in 1937 amounted to 13,896 short tons, compared with 10,924 (revised figures) for 1936, an increase of 27.2 per cent. The quantity sold or used by producers during 1937 was 12,079 short tons valued at \$344,644, an increase of 9.2 per cent in quantity and 9.7 per cent in value over 1936. The largest percentage of the total, as in recent years was short fibre chrysotile from Vermont. Arizona produces small quantities of high grade chrysotile of spinning quality and this is expected to be utilized in increasing quantities on the Pacific Coast. Production in Arizona was substantially higher in 1937 than in 1936. The increase in imports of crude asbestos fibres from Africa in 1937 was noteworthy.

Imports of unmanufactured asbestos amounted to 307,188 short tons, valued at \$10,470,208, a gain of 26.1 per cent in quantity and 39.1 per cent in value over 1936. Exports amounted to 3,004 short tons valued at \$253,734. The apparent consumption for 1937 (domestic fibre used plus imports, minus exports) was 316,263 tons valued at \$10,561,118, a gain of 26 per cent in quantity and 40.3 per cent in value as compared to 1936. Exports increased 22.9 per cent in value. The domestic production of 1937 supplied only 3.8 per cent of the fibre needed in plants making asbestos products. While the tonnage consumption of raw asbestos materials was higher in 1937 than in any year in the previous 10, the value for 1929 was somewhat higher.

ASBESTOSIS, a disease of the lungs caused by long-continued inhalation of asbestos dust. It was found by the United States Public Health Service to be the principal physical defect shown by the medical examination of 541 men and women employed, or recently employed, in three factories making asbestos textiles. The primary effect of asbestos dust appeared to be the initiation of fine, interstitial pulmonary fibrosis which was not observed to progress as far as the nodular stage. This fibrosis was found in post-mortem examinations of three former asbestos workers. Lung fibrosis, in living persons, can be detected by x-ray examination. Important symptoms of asbestosis are progressive dyspnoea, variable cough which sometimes raises blood-streaked sputum, and loss of weight. The percentage of persons in different occupational groups in the plants studied, who were affected by asbestosis or any of its symptoms varied with the average dust concentration to which they were subjected and with the length of their employment. Three cases of asbestosis which were diagnosed as doubtful, were found in persons who were working where dust concentrations

were below 5,000,000 particles per cubic foot. The conclusion was that if asbestos dust concentrations in the air breathed are kept below this limit, new cases of asbestosis would not appear. The persons examined in the three plants were 423 men and 118 women, all younger than the average industrial worker. Almost half of them had previously been employed in cotton or woolen textile mills. Only 23 had been employed in a trade in which workers are known to be exposed to organic dust and only one of this number had pneumoconiosis.

ASCENSION ISLAND. See under St. HELENA.

ASCORBIC ACID. See MEDICINE AND SURGERY.

ASIA. See articles on CHINA, INDIA, etc.

ASIA MINOR. See ARMENIA; TURKEY; etc.

ASPHALT. An increased demand for asphalt, domestic and foreign, of 2½ per cent in 1937 over 1936, was reported by the United States Bureau of Mines. Petroleum refineries enlarged their output by 294,302 tons, from 4,065,622 tons in 1936 to 4,359,924 tons in 1937. Imports of lake asphalt, grahamite and petroleum asphalt apparently increased 69,785 tons. As a consequence, stocks at refineries were 193,247 tons larger than at the end of the previous year. There was an increase in domestic demand of 2 per cent, from 3,962,257 short tons in 1936 to 4,049,303 tons in 1937. During the first seven months of the year 1937 there was a reported increase in demand of 15 per cent but the increase did not hold because of a decline in road-building activity. Production of asphalt from foreign petroleum declined to the extent of 182,452 short tons.

Highway construction accounted for three-fifths of domestic consumption. There was an increased use of asphalt for lighter road surfaces, especially on county and farm-to-market roads, and another increase in use for soil stabilization. The sales of emulsions and fluxes, employed for the last named purpose rose from 55,961,368 gallons in 1936 to 62,683,166 gallons. The increase in value was \$549,802 for 1937 over 1936. There was a small increase in the use of asphalt for the manufacture of roofing materials. Sales of waterproofing materials showed a decline.

ASTRONOMY. Progress of. The most important astronomical event during the year was the discovery of two satellites of the planet Jupiter, bringing the total number to eleven. During the months of July and August, Dr. Seth B. Nicholson with the 100-inch reflecting telescope of Mount Wilson Observatory made a survey around Jupiter with photographic plates each of one hour exposure, thus revealing stars one million times fainter than can be seen with the naked eye. In taking the photographs, the motion of Jupiter was allowed for with the result that the images of the stars were elongated while those of the satellites were circular. Altogether on the various plates about forty moving objects were found, but most of them could easily be distinguished from satellites because their motions were different from that of Jupiter. Thus the 6th, 7th and 8th satellites were recognized