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OCCUPATIONAL TUMORS AND ALLIED DISEASES

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some types. The serpentine has a bandy or slate texture and may contain traces of nickel and copper. It is mined in Canada, Russia (Ural Mountains), Germany, Corsica, France (Pyrenees), Siberia, and South Africa.

The Canadian asbestos, mined at Thetford near Quebec, where approximately 78 per cent of the world production is obtained, consists of 33 parts of magnesium, 41 parts of silicic acid, and 5.75 parts of iron oxide (Oliver); while South African asbestos is composed of 2 parts of magnesium, 50 parts of silicic acid, and 40 parts of iron oxide. Italian asbestos contains 42 parts of silicic acid, 38 parts of magnesium, and 3 parts of iron oxide. None of the various types possesses any free silicic acid.

The production of asbestos has risen enormously in recent years. It received this great impetus from its use in the automobile industry. The total production in 1868 was two hundred tons; in 1880, five hundred tons; in 1925, 330,000 tons; and in 1929, 430,000 tons. The United States is the principal consumer of this product. More than 12,000 persons are employed in the chief asbestos plants of this country. Occupational contact with asbestos is present in many industries using asbestos products. Asbestos is employed for a great variety of purposes, such as the manufacture of incombustible and insulating materials (fire resistant clothes, blankets, theater curtains, sheets, ropes, cords, twine, and threads), filter cloths, mill-board, wall board, shingles, tiles, mortar (together with cement and plaster of Paris for providing a fire-proof wall lining), clinkers, gaskets, packing material of pumps, insulating material of steam pipes, water pipes, boilers, and electric wires, brake lining, paper, mattresses, adsorbent of dyes (for manufacture of fire proof and acid proof stains), ingredient of rubber products, and artificial wood (mixed with wood powder) (Lanza; Lynch; Stewart, Bucher and Coleman; Ullmann; Encyclopedia Britannica; Dewirtz; Nordmann; Ahrens; and Cooke). The fibrillar types are spun, twined, and woven, while the brittle varieties and the dusty waste are compressed and molded into the desired shapes.

Conditions and Types of Exposure. The chief health hazard consists in the inhalation of asbestos dust, which is produced abundantly during the preparation of the mineral for the spinning process (purification and removal of stony impurities) and during various other phases of the production and manufacturing processes of asbestos and asbestos containing goods. Direct contact of the skin with asbestos is of minor importance. The number of actually exposed persons is rather large in the industries manufacturing asbestos products. Of the 12,000 workers employed in the major asbestos plants of the United States, Lanza estimates that 10,000 are exposed appreciably to the asbestos dust; while in Germany, where several thousand asbestos workers are present, only a fraction are said to be actually exposed.

Symptomatology: Cutaneous Lesions. The direct skin contact with mined asbestos is responsible for the production of painful warts formed around the asbestos needles, which penetrate the skin of the palms of the hands. The