

ter in oil and water colors and paints (wall paints, wall-paper printing, cotton printing, artificial flowers, colored crayons) and as parasiticide, arsenic acid, arsenic sulfides (used for hardening of lead buck-shot).

Arsenicals are used as preservatives of pelts (taxidermy); glue (loading of yarns), as dehairing agents in the tanning industry, for the bronzing of copper and brass, in the production as well as in the fixation of aniline dyes on woven goods, in the manufacture of numerous chemicals (present as an impurity or adulterant in caustic soda, glucose, and sulphuric acid), and medicinal preparations.

Inorganic (arsenious acid [Fowler's solution], AsI_3 [Donovan's solution]) and organic arsenicals (arsphenamines, cacodylates) are contained in numerous preparations used in medical therapeutics (local caustics, tonics, antiseptics, antispasmodics, antisyphilitics) and cosmetics (hair lotions). Organic arsenicals play also an important rôle as war gases (Lewisite, diphenylchlorarsine).

The United States is by far the largest producer and consumer of arsenicals (Ullmann, F; *Encyclopedia Britannica*.). Considerable quantities of arsenic compounds are manufactured and used in Germany, Australia, Sweden, as well as other countries.

II. EXPOSURE

In direct relation to the widespread natural occurrence and the numerous practical uses of arsenicals, a great many individuals have a more or less intimate contact with these substances. Chronic occupational arsenicism, with or without cutaneous manifestations, is an industrial disease not infrequently encountered, provided it is searched for properly (White). Arsenicals may enter the organism by direct resorption through the skin (especially when diseased [eczema] [Deckert]); by inhalation in the form of a gas, vapor or dust; or by oral ingestion. The development of chronic arsenical dermatoses among miners exposed to dust of arsenic-containing ores has been reported by Anderson; Bayet; Schaerrer; Fischer; Eulenberg; Saupe; and others. A second group of workers, showing an especially high incidence of chronic arsenicism, is represented by men employed in the smelters where roasting, extracting and packing of arsenic is carried out (Miyaji; Paris; Saupe; Ullmann, K.). The attendants of boilers and furnaces, as well as the men shovelling the arsenic in the condensation chambers into barrels, come into intimate and extensive contact with arsenic fumes, vapors and dust. These individuals often show the local as well as the systemic toxic effects of this chemical.

Chronic arsenicism with cutaneous lesions caused by an occupational exposure has been observed during the past 70 to 80 years in workers of numerous occupations: glass workers; chemical workers (dye manufacturers, manufacturers of sheep dip); tanners; taxidermists; workers in lead factories; workers in rotogravure establishments (by the use of arsenic containing ink); workers