

the successful isolation of specific, carcinogenic chemicals from tar had been accomplished, a number of other possibilities, which may be listed for their historical value, had been considered as the causative factor of tar cancer.

Schamberg assumed that the irritative action of tar upon the skin was due to the presence of radioactive substances in this material. The rays emitted were thought to be responsible for the epithelial proliferations observed. This conception received some support from Kabakjian, who showed that tar exerted a certain effect upon photographic plates. Kabakjian himself, however, ascribed this action of tar to the production of a gaseous material released from the tar. When it soon became apparent that tar did not contain any radioactive material, the hypothesis of Schamberg was discarded.

Lewin (in 1913) pointed out that tar dermatitis was caused by photosensitization of the skin to solar rays by certain substances (acridines, substances belonging to the anthracene and anthraquinone series) contained in tar. Serious consideration was given to the possibility that photodynamic processes and melanin changes produced by them might play a direct or contributory rôle in the development of tar and pitch cancer (Baader; Büngeler; and Lauchs). The most important evidence, supporting the conception of a causal interrelation between tar carcinogenesis and photochemical action, is that fair skinned, blue-eyed, and blond individuals are considerably more susceptible to tar cancer than dark-skinned persons, who are, also, less likely to develop solar cancer (Hunt; Heller; and Koelsch). *It might be interesting to connect the accumulation of melanin in the skin, taking place under the influence of tar, with the subsequent development of a cutaneous malignancy, as melanin contains principally aromatic amino compounds, which have some chemical similarity with known carcinogenic agents.*

An increased, pathological pigmentation as such cannot be considered as a contributory factor to any kind of carcinogenesis of the skin. Disturbances of this type are observed following physical and chemical irritations of the skin of the most varied kind, without resulting in or favoring the development of skin cancer. Exposure to light is not essential for the production of tar cancers, and pitch and tar cancers are observed frequently in regions of the human skin, which are rarely exposed to light (scrotal sac) (Teutschlaender). Foerster and Schwartz contended that photosensitizing radiations predominate in the short wavelengths of the sun's spectrum chiefly between 3,900 and 5,000 angströms; and that fluorescent spectra emitted by photosensitizing substances contained in tar differed from those involved in the production of tar epitheliomata. These investigators concluded that tar melanosis is the result of a true photosensitization, coming from an exposure to specific, spectral bands, and not a manifestation of a chemical contact sensitization or an allergic reaction (photoallergy). As tar and pitch melanosis usually extend to the nonexposed parts of the skin, such as the scrotal sac, this claim is not entirely correct. Clinical