

United States, in parts of which, however, the frequency of skin cancer approaches that found in Australia because of similar climatic conditions. Lawrence recorded that 13.23 per cent of 20,000 patients suffering from dermatological diseases exhibited one or several of the three manifestations characteristic of solar dermatosis (4.38 per cent, keratoses; 6.82 per cent, rodent ulcer; 1.975 per cent, epithelioma). Paul stated that skin cancer was the most important cutaneous lesion in Australia and was caused by exposure to actinic energy. Duhig mentioned that in Queensland, Australia, cancer of the skin was common in men and usually affected the face, ears, and back of hands, that is, the exposed parts of the skin.

Additional confirmatory evidence in this respect was supplied by Maisin who noted that the moderately deep pigmented Chinese and Malayan inhabitants of the Dutch East Indies who usually go bare-legged have often cancer of the foot, for the causation of which this investigator incriminated an extensive exposure to sun rays in combination with trauma and infection.

Observations made by Dubreuilh in southern France (Bordeaux) during the years 1890 to 1907 showed that precancerous lesions (senile keratoses) were especially frequent among old people coming from rural districts and were often associated with keratinizing epitheliomas even when occurring in younger outdoor workers. In view of the predominant location of these manifestations on the exposed portions of the skin (face, dorsal aspect of hands, less often forearms and neck) and because of their morphological similarity with the cutaneous changes found in xeroderma pigmentosum, Dubreuilh concluded that sun-light, and particularly its ultraviolet portion, was responsible for their production.

IV. EXPERIMENTAL SOLAR AND ULTRAVIOLET CANCER

The circumstantial clinical and statistical evidence suggesting a carcinogenic action of a prolonged and intensive solar irradiation upon the human skin is supported to some degree by the experimental results obtained in mice and rats which were exposed to solar and ultraviolet rays (Findlay; Putschar and Holtz; Roffo; Wahlgren; Rusch and Baumann; Knudson, Sturges and Ryan; Beard, Boggess and von Haam; Herlitz, Jundell and Wahlgren; Büngeler; Hueper). Findlay was the first investigator who produced cutaneous malignancy in albino mice with the aid of ultraviolet rays, while studying the hastening effect which this agent exerted upon the development of tar cancers. Out of nine mice surviving for more than 32 weeks a daily application of ultraviolet rays from a quartz lamp upon a depilated area of the skin, four animals developed carcinomas and three mice papillomas.

Putschar and Holtz, who used not only albino rats, but also beige and hooded rats, obtained carcinogenic responses in animals exposed to the rays emitted from a mercury arc lamp for periods which increased from 2 minutes daily at the start to 24 hours during the latter part of an experiment which