

at one time, advocated by some dermatologists, but in the hands of the author they have proved to be of no value.

No general rules can be given for the treatment of the chronic eczematoid or chronic lichenified types of dermatitis. The treatment is left to the judgment of the dermatologist and depends on the stage and extent of the lesions, the complications present, and the condition of the patient.

VIII. Occupational Cancer

Workers exposed to soot, pitch, coal tar, crude petroleum from certain localities (such as Scotch shale oil), x-rays, radium, and excessive solar radiation have a high rate of skin cancers. Chromic acid and chromates have been found to cause lung cancer.

A. SOURCES OF OCCUPATIONAL CANCER

Soot. Cancer of the scrotum among chimney sweeps was reported in England as eight times more prevalent than among the general population. It is caused by rubbing the soot into the scrotum as the sweep is squeezed when descending the chimney. It is practically nonexistent in other countries and is on the decline in England.

Coal tar. The heavy coal-tar distillates and pitch are the most frequent causes of occupational cancer. In the United States more than 90 per cent of all reported occupational cancers are caused by coal tar and its heavy distillates. The rate of skin cancers among workers with coal-tar pitch is high; the author found 5 cases among 100 workers. Tar and pitch from gas works are more carcinogenic than tar and pitch from coke ovens. Road builders, roofers, conduit makers, and briquet makers are some of the workers outside coal-tar and gas plants who handle coal-tar products and are often affected with skin cancers.

Petroleum. Workers in petroleum fields, especially where the crude oil is highly carcinogenic, are subject to occupational skin cancers. Shale-oil workers are said to have a carcinoma incidence of 1 per cent annually. Pure medicinal petroleum oils are not carcinogenic. Treatment with sulfuric acid during the refining process destroys the cancer-producing principle. Mule spinner's cancer of the scrotum has not been observed to be caused by spindle oils of American origin. It has been reported in England and is caused by friction of the oil-soaked clothes against the scrotum of workers on mule spinning machines which throw an oil spray. It can be prevented by wearing oilproof aprons.

Aniline. Workers in factories making synthetic dyes and exposed to benzidine, α -naphthylamine, and β -naphthylamine, have a high rate of papilloma and carcinoma of the bladder.

Chromium. Workers engaged in the manufacture of chromium salts and chromic acid have been found to have a large excess over the normal incidence of lung cancer.

X-rays. X-ray technicians and tube makers have a comparatively high rate of occupational cancer.

Radium. Radiologists, workers with radium, have a high incidence of occupational cancer. Radium dial painters have developed malignant bone tumors from the ingestion or inhalation of radium. Cancer of the lungs is prevalent among miners of radium ore. Uranium miners cancer has not yet been reported.

Actinorays. Outdoor workers, such as fishermen, sailors, soldiers, and farmers, have a high incidence of skin cancers.

Trauma. Malignant tumors may develop at the site of chemical burns and repeated traumatism. That a single trauma can cause cancer is debatable and is difficult if not impossible to prove. In order to prove it, it must be shown that the part was normal before the trauma; that the trauma was at the site of the cancer; that a sufficient interval elapsed between the trauma and the appearance of the cancer; that there was no other traumatism at the site of the cancer during this interval; and biopsy must verify the malignant nature of the growth.

Heat. Cancers can arise in cicatrices of burns, usually a number of years after the burn.

B. PREVENTION OF OCCUPATIONAL CANCER

Workers having keratoses, warts, or xeroderma should not be employed in occupations where there is a marked cancer hazard. Processes giving off tar or pitch fumes should be enclosed. Persons working with carcinogenic coal-tar derivatives should be furnished with clean work clothes daily and be compelled to take showers after work. Protective ointments containing chemical or physical light screens are useful to protect against excessive sunlight.

IX. Methods of Investigation

In order to investigate intelligently the cause of occupational dermatoses, one must have at least a sufficient knowledge of dermatology to distinguish contact dermatitis from such ordinary nonoccupational skin diseases as psoriasis, impetigo, urticaria, and pityriasis rosea. In addition, one should have a fair knowledge of the action of industrial chemicals on the skin. The actual investigations in factories will give one the knowledge of industrial processes, that is, another essential requirement.

Before one can hope for success in finding the cause of a particular outbreak of occupational dermatitis, it is necessary to have the experience and knowledge gained by studies of the skin hazards and the normal incidence of occupational dermatoses in the basic industries. Such studies not only acquaint one with the reacting properties of various chemicals, but often lead to the discovery of health hazards not previously reported. The basic industries should be selected for these studies because they manufacture the chemicals used in all other factories, and their workmen are subject to the hazards of contact with these chemicals.