

esis. Vossenaar reported that "pitch skin" was only occasionally encountered among the coal miners and workers of the Limburg district in Holland. Histological studies of the reported pigmented lesions demonstrated that the pigment is melanin, almost exclusively accumulated in the chromatophores of the cutis, leaving the basal cells of the epidermis unaffected (Barnewitz).

While Young and Russell did not find excessive incidence of skin cancer among English coal miners, Bettazzi reported a case of carcinoma of the hand in a coal worker who had handled, for five years previous to the development of the tumor, a coal rich in tar and pitch. After sustaining an accidental abrasion of the skin of the back of the hand by a coal splinter, this man continued his usual work for two months and frequently rubbed coal dust into the wound when attempting to clean his hands. Nineteen months after the injury the coal worker died from metastases of an ulcerative carcinoma originating in the wound. Haagensen, in his survey of the occupational cancers treated at the Memorial Hospital in New York during the years 1917 to 1930, listed sixteen cases of cutaneous epithelioma in male individuals who had had intimate occupational contact with coal. The occupation of these men was coal shoveler (cancer of the lip), coal bargeman (carcinoma of the neck), fireman (14 cases: three with carcinoma of the ear, four with cancer of the lip, one each with epithelioma of the nose, hand, eyelid, penis; three with cancer of the cheek, and of these two were basal cell tumors).

In view of the recognized mechanical irritative action which coal dust exerts upon the skin (Jordan), claims have been advanced that the potential cancerigenic effect of coal dust is not so much of a chemical nature as of a physical, chronic traumatic type. Fabry and Bockholt pointed out that there were 15,674 miners with skin diseases recorded, 1897-1921. As one hundred and twenty-six were cases of cancerous character, Fabry and Bockholt expressed the opinion that an occupational superficial mechanical irritation, caused by the coal dust, might have been a predisposing factor in the development of these cancerous lesions. Inasmuch as similarly extensive surveys from other coal mining districts are not available and because marked variations in the chemical composition of different kinds of coal exist which may elicit conceivably different reactions in exposed skin, definite conclusions cannot be drawn about the possible carcinogenic action of coal and the actual existence of industrial cancers caused by coal. The scanty evidence available at present does not favor the conception that coal dust is a chemically or a mechanically active carcinogenic agent.

II. LIGNITE

Brown coal and similar bituminous carbonaceous deposits (ozokerite, lignite) are found in Germany, Siberia, Russia, United States (Utah, Texas), Mexico, Hungary, Finland, Portuguese East Africa, and numerous other countries. They are black, brown, green or yellow colored, greasy, soft to