

formation of diethyl arsine has been diminished by the treatment of the wooden supports with carbolineum, thereby impairing the growth of moulds. The chemical examination of the hair and nails of the Schneeberg miners for the presence of arsenic was negative (Döhnert), thereby indicating that an appreciable and prolonged exposure to arsenicals does not exist. This investigator called attention to the fact that the cobalt ores in several mines in France and Norway contain up to 60 to 70 per cent of arsenic, while the miners are free from lung tumors. Arsenic is also a constant component of coal (Belgium), but coal miners are not especially affected by pulmonary neoplasia. If, therefore, arsenic plays a causal role at all in the production of the Schneeberg cancers, it is only in a minor contributory capacity.

The inhalation of siliceous dust by the miners also has prominently figured in attempts to explain the occurrence of these cancers. Härting and Hesse thought that the chronic irritation of the mediastinal lymph nodes by the dust inhaled and deposited in them was the cause of an excessive proliferative activity resulting in the formation of lymphosarcomatous neoplasms. Following the establishment of the epithelial nature of the Schneeberg tumors, Schmorl asserted that the rock dust deposited in the peribronchial lymph nodes and lymphatics caused the production of small mucosal bronchial necroses and ulcerations which finally led to a malignant transformation in the bronchial epithelium. Upon a more careful and extensive analysis of the cases of Schneeberg cancer, it was observed, however, that these tumors occurred in lungs showing little or at least no unusual degree of pneumoconiosis. There did not exist any parallelism between the degree of pneumoconiosis and the incidence of pulmonary malignancy among the Schneeberg miners. Inasmuch as such causal interrelations cannot be demonstrated for silicosis and pulmonary cancer in general, it is highly improbable that they should be present in this particular instance. There remains, however, a possibility that the chronic inflammatory changes set up in the lungs of the miners by the pneumoconiotic process may create a susceptible soil or produce a certain proliferative sensitivity of the pulmonary tissue for a more ready neoplastic response to the exposure to the radium emanation present in the rocks, water and air of the mines and inhaled by the miners.

This actinic factor in recent years has gained increasingly in importance and the evidence available at present supports the conception that it is the chief cause of the Schneeberg cancers. It is remarkable that the first suggestion as to the possibility of an actinic etiology (radium and radium emanation) of these tumors came from a layman employed in the office of the mines (Uhlig). The possible role of an exposure to radioactive uranium ores was again maintained in 1913 by Risel. However, this suggestion was not received favorably at that time, in view of the fact that nothing was known in regard to the existence of similar conditions among the miners in Joachimsthal. After Uhlig had commented favorably on the possibility of a causal significance of