

activated by the exposure to a highly unusual carcinogenic agent present in the mines. The environmental nature of the causative agent is indicated, on the other hand, by the fact that Hueck found 12 lung cancers in 14 autopsies performed on inhabitants of Schneeberg and vicinity.

*Symptomatology.* The first subjective symptom, indicating the development of a pulmonary tumor in these miners, is a protracted cough. This is slight and dry in the beginning, but gradually becomes more severe and complicated by a viscous, mucoid sputum difficult to produce. Occasionally, the expectorated matter may be tinged with blood. This persistent bronchitis may continue without further appreciable changes for years. In some instances an increasing degree of dyspnea develops, combined with dull pain in the chest and back. The general status may remain relatively good for many years until finally it gradually, or upon occasion, suddenly and rapidly takes a turn for the worse. Whenever this aggravation occurs, the dyspnea becomes increasingly severe and torturing. Coughing and expectoration then are more frequent and abundant. The sputum, however, rarely shows the raspberry-jelly-like character, considered typical of pulmonary cancer. The color of the skin becomes pale and greyish, or sometimes cyanotic with the progressive course of the neoplastic process. Larger hemorrhages from the lung occur; the swallowing may become difficult and the veins of the neck may become dilated because of the intrathoracic neoplastic masses pressing upon the esophagus and upon the blood vessels. Finally death results after the patient has become highly cachectic.

The findings obtained from a physical examination depend to a great deal upon the extent and site of the neoplastic process, and the simultaneous presence and the degree of complicating conditions, such as pneumoconiosis, which relatively often coexists with a carcinoma in the lung of the Schneeberg miners. The diagnosis of an early and centrally located pulmonary malignancy is made especially difficult in silicosis. The findings by Rostoski, Saupe and Schmorl considered most indicative of a pulmonary tumor are an intense dullness in the upper parts of the lungs, with markedly decreased or entirely absent breath sounds, and the absence of fremitus. The supraclavicular and suprascapular fossae are usually normal. A serous pleurisy may exist, but this is never of the hemorrhagic type. The physical findings do not differ essentially from those in a pulmonary cancer of unknown origin.

The examination of the blood reveals sometimes a marked leucocytosis (14,100; 23,800, and 36,400 leucocytes, respectively, in three cases observed by Rostoski, Saupe and Schmorl), while others reveal a leukopenia or a relative lymphocytosis. In three cases, there existed an eosinophilia of the blood (5; 6.25; and 10 per cent) and occasionally of the pleural exudate.

The examination of the chest with roentgen-rays often shows a picture which is, to a certain extent, characteristic of the Schneeberg type of lung carcinoma, that is, a combination of neoplastic and silicotic lesions of the lung.