

fact that the exposure time essential for the production of this disease seems to be not less than ten years (Martineck). It would be fallacious, however, to conclude from this negative observation upon a future immunity of the Belgian miners and workers as to the occurrence of pulmonary cancer (Maisin). The Canadian operations in radioactive ores are of too recent date to have yielded their share of occupational pulmonary malignancy. In case the Belgian and Canadian operations should be conducted without the essential and comprehensive protective measures for the workers, the prospects for an epidemic-like appearance of lung carcinomas among their employees can be anticipated in the not too distant future.

The Pulmonary Tumors at Schneeberg

Technological Notes. The mines in the Schneeberg district were opened in the year 1410 for mining ores containing silver, copper and iron. From the year 1470 on, these mines were also worked for the production of cobalt and arsenic containing ores. During the seventeenth century, the mining and smelting of cobalt ores were supplemented by the establishment of a cobalt dye industry (cobalt blue) in this region. During subsequent centuries, the ores also were used for the extraction of bismuth, nickel and uranium. In addition to these metals, they contain small amounts of tin, zinc, lead, magnesium and manganese (Rostoski). More recent investigations have shown that the water and the air of these mines are radioactive. The basic rock contains silicates (granite). Bismuth occurs in a metallic form, while cobalt and nickel are found as arsenides (up to 0.45 per cent arsenic is present in cobalt ore). There are eight mines in the Schneeberg region. The mine shafts extend to a depth of 1,500 yards (Brockbank).

The number of miners employed in these mines has varied a great deal during the centuries, depending mainly upon the types of ores for which these mines were worked. There was usually a decrease in the number of workers following the exhaustion of certain ores (silver and copper), while an increase occurred whenever the ores yielded metals heretofore not utilized. The mining operations at times gave work to 700 or 800 miners. Their number gradually was reduced after the turn of the century as the operations were curtailed for competitive reasons. This development was accentuated after the World War, so that there were only 149 active miners in 1921 and still less (54) in 1926 (Rostoski). However, the mines were reopened in 1933 and the mining operations are carried on in recent years on a much more extensive scale (Baader). Hueck stated in 1939 that there are 70 miners employed in the Schneeberg mines.

Exposure. The operations in the mines always entailed the production of a certain amount of dust. This hazard has been aggravated considerably since the introduction of dynamiting and the use of air-pressure tools to drill holes into which dynamite sticks are placed. The dust of the rocks contains particu-