hard-coal miners to determine that lung tissue responds differently to the dust of coal mines than to pure silica dust.

X-ray examination. Long experience in interpretation of roentgenograms of silicotics with varied exposures may enable one to conjecture with a reasonable degree of accuracy the general type of exposure. Large amounts of nonsiliceous or silicate dust in the mixture tend to induce perilymphatic deposits of the linear type. Free silica intensifies this reaction and causes it to become fibrous. At times hyaline nodulation occurs, perhaps when there is enough free silica in the dust, but this reaction is atypical. Gross examination of the modified silicotic nodules may reveal heavy deposition of pigment with or without dense fibrosis. With a hand lens hard elevated nodules may be seen in the centers of some of the pigment deposits (see Figures 7, 8, 9 and 10).

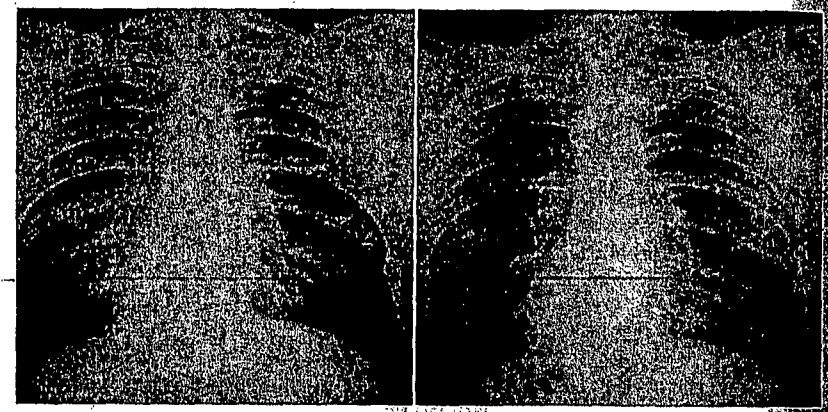


Figure 7. *Siderosis* in electric welder (many years in confined areas and never silica dust exposure). Note normal root shadows and absence of changes in nine-year interval. He is still working as foreman in weld shop in 1955 without chest symptoms; has refused re-x-ray since 1944. (Left, 1935; right, 1944.)

Microscopic examination. On microscopic examination it will be seen that many of the nodules consist of nothing but coarse, heavily pigmented fibers devoid of organized arrangement. Such nodules may have irregular peripheral extensions which fuse with those of others. (This fusion of nodules may be partly responsible for the appearance produced in the conglomerate reaction.)

d. Nodular Silicosis with Localized Conglomerate Lesions: X-ray examination. X-ray examination shows isolated or bilaterally symmetrical massive shadows usually located in the upper half of the lungs but sometimes in the lower third. These massive shadows may extend from the root to the pleural surface, or they may lie deep in the parenchyma. Serial x-rays may show that the lesions remain stationary over a period of many years or they may show an increase in

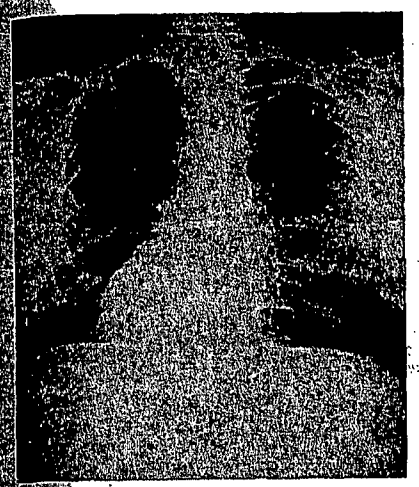


Figure 8. *Siderosilicosis* in grinder in foundry cleaning rooms for twenty-five years. Note minimal discrete nodulation and rather small root shadows. No chest symptoms.

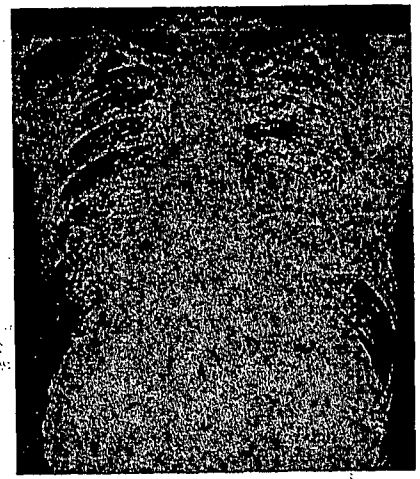


Figure 9. *Baritosis.* Barium oxide powder exposure for many years. Never shortness of breath or other symptoms referable to the chest. (Courtesy Dr. E. P. Pendergrass.)

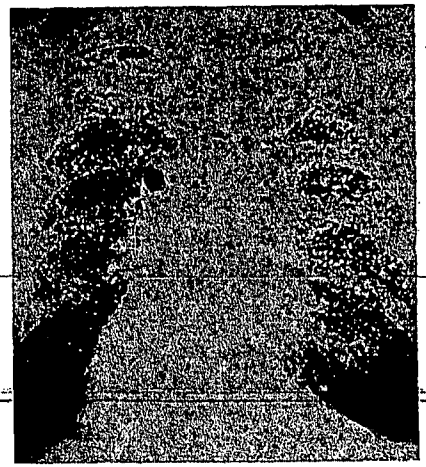


Figure 10. *Stannosis.* Tin oxide powder exposure for many years. No shortness of breath or other symptoms referable to the chest. (Courtesy Dr. J. B. Stocklen.)