

rapid destruction of the erythrocytes, whose life span is shortened by lead, and is thus of a regenerative nature. Otto expressed the opinion that an increased hemo-concentration caused by an expression of plasma from the spastically contracted vessels, which exist in lead poisoning, contributes to the production of an erythrocytosis (Flury).

Mercury. The occurrence of an erythrocytosis in occupational poisoning by mercury has been recorded (Koelsch and Lederer; and Dunajewsky and Peissachowitsch). The workers in mercury mines have been thus far the most affected group. The causative mechanism active in this instance does not seem to be related to any regenerative response to the known anemiogenic effect of mercury, but is attributed to an increased hemo-concentration following colitis and cachexia. Meyer and Gottlieb observed similar blood changes in animals experimentally exposed to mercury compounds.

Cobalt. At the present it is not known whether occupational exposure to cobalt, its compounds, or ores has ever produced an erythrocytosis in man. The investigations conducted by a commission of the International Bureau of Health of the League of Nations, in connection with the occurrence of pulmonary cancer among cobalt miners in Schneeberg, have not yielded any information upon this question. In view of the existing uncertainty as to the erythrocytotic activity in man, it was thought advisable to record the experimental evidence attesting to the erythrocytotic effect of cobalt salts.

Among the first investigators to record the erythrocytotic action of cobalt were Waltner and Waltner, who fed rats a diet containing 0.5 per cent cobalt chloride for a period of five to six months. They observed erythrocyte values up to 10.5 million and hemoglobin concentrations of 165 per cent. At this time the animals showed a loss of fertility, impairment in growth, and porosis of the bones. A diet containing cobalt nitrate produced a similar effect upon the erythrocytic picture. The leucocytes were not altered, either quantitatively or qualitatively, during these dietary experiments. The addition of smaltine (a cobalt arsenide ore, As_2Co , containing approximately 15 per cent iron) did not produce any blood changes in spite of the fact that this ore contains three substances, cobalt, arsenic and iron, which under proper conditions exert an erythropoietic stimulation.

Marshall was successful in eliciting an erythrocytotic response in rats treated with cobalt compounds. Adult rats fed cobalt chloride (Pitini and Messina) showed an elevation in erythrocytes ranging from the original level of 8.5 million to 12.0 to 13.0 million, while the hemoglobin concentration rose from 13.5 grams to 18.0 to 20.0 grams per 100 cc. blood. Dogs, cats, and rabbits receiving the same medication had, after some time, hemoglobin values which surpassed the original level by approximately 13 per cent. Erythrocytotic responses after cobalt administration were observed in dogs by Mascherpa and Davis; the latter gave a 1:1000 solution of cobalt chloride by a stomach tube every day for two weeks, and obtained a 20 per cent increase in erythrocytes.