

size of the particles (the finest dust was not found at all), the fact that they disappeared from the lung after some weeks in some cases and the fact that the lungs in the long period experiments contained no more dust than did the lungs in the short period experiments suggest that the dust—the finest particles in particular—is absorbed fairly rapidly from the lung. As  $V_2O_5$  is more readily soluble in body fluids than in water, it is probable that the absorption occurs through dissolution. In view of this and of the fact that the dust injected intraperitoneally into guinea pigs was found to have no fibrosis-producing effect, there are no grounds for the development of specific chronic changes in the lungs as a result of inhalation. On the other hand, the possibility that persistent bronchitis may give rise to fibrotic changes in the lung should not be ruled out.

Thus the animal experiments have confirmed the clinical observations on the following points: the acute, in many cases marked, irritation of the respiratory tract and conjunctivas, which is the outstanding symptom; the acute changes in the lungs (by far more common in the animals), which should probably be designated as pneumonitis caused by vanadium and principally of chemical (or chemical-bacterial) origin; the possibility of the development of pathologic changes of a mild chronic inflammatory nature in the respiratory tract; the absence of specific chronic changes in the lungs, and the possibility of a slight lesion of the liver, which may not justifiably be associated with the vanadium. Accordingly, there is no certain evidence of chronic general poisoning. No clinical features correspond to the emphysema and the postpneumonic atelectasis or the bronchopneumonic-atelectatic changes demonstrated in the animals, or to the enteritis which was present in some of the animals exposed for a short period.

As a preliminary result of tentative treatment with dimercaprol, half of the treated animals died quickly, whereas the untreated animals survived. Whether this may be a matter of additive effect (Braun, Lusky and Calvery<sup>22</sup>; Gillman, Philips, Allen and Koelle<sup>23</sup>) remains to be proved.

#### SUMMARY

Vanadium pentoxide is of great and steadily increasing importance, chiefly for the manufacture of hard steel alloys. Vanadium pentoxide dust causes, when inhaled, an occupational disease which up to now has passed fairly unnoticed and has not been made the object of much research. This disease is of a relatively mild nature, and the prognosis is favorable. In the present communication it has been shown that the outstanding clinical feature is an acute, in some cases marked, irritation of the respiratory tract, sometimes attended by pneumonia (vanadium pneumonitis). Pathologic changes of a mild chronic inflammatory type may occur in the upper respiratory tract. Allergic lesions of the skin may be present. Despite the fact that absorption of vanadium has been proved to occur, the possibility of a slight lesion of the liver and the slight tendency toward anemia, no definite evidence

22. Braun, H. A.; Lusky, L. M., and Calvery, H. O.: The Efficacy of 2,3-Dimercaptopropanol (BAL) in the Therapy of Poisoning by Compounds of Antimony, Bismuth, Chromium, Mercury and Nickel, *J. Pharmacol. & Exper. Therap.* (supp.) **87**:119, 1946.

23. Gillman, A.; Philips, F. S.; Allen, R. D., and Koelle, E. S.: The Treatment of Acute Cadmium Intoxication in Rabbits with 2,3-Dimercaptopropanol (BAL) and Other Mercaptans, *J. Pharmacol. & Exper. Therap.* **87**:85, 1946.