oughly dried from ammonia. The potassium salt of maltose chars in air in a few seconds even when dry. The mono-potassium salt of α-methylglucoside is stable toward air. The tri-potassium salt is stable toward air when dry but chars readily when wet with ammonia.

The sugars were recovered from all of these salts and identified by appropriate tests.

When glycogen is suspended in liquid ammonia and a solution of potassium amide is combined with it at —33.5° C., a white precipitate separates out immediately. This precipitate chars immediately upon exposure to air, even when dry. This indicates that glycogen is precipitated as a salt and not as a result of the neutralization of the electric charge on the glycogen micelles.

When the reducing sugars, arabinose, glucose, levulose, galactose, maltose, and lactose, are sealed in glass tubes with sodamide and allowed to stand at 20° C., caramelization takes place in less than 24 hours. This is analogous to the action of strong bases on the reducing sugars. Sucrose does not caramelize under these conditions.

Our interest in the alkali salts of the carbohydrates lies in the fact that they may be of use in the preparation of esters and ethers of these substances. Preliminary tests have justified this interest.

5964

Bronchial Stenosis in Suppurative Pulmonary Lesions.

W. E. ADAMS. (Introduced by Edmund Andrews.)
From the Department of Surgery, University of Chicago

Suppurative lesions of the lungs, as well as in other parts of the body, are usually treated by securing proper drainage and rest of the part. One of the most common methods of obtaining these requisites is massive collapse of the involved region. A procedure for producing experimental massive atelectasis has recently been developed in these laboratories.[1] Briefly, this consists of the production of complete stenosis of a bronchus by cauterizing its mucous lining with a 35% solution of silver nitrate. Two weeks following the application of the cautery, the bronchial lumen is found completely occluded and is accompanied by massive atelectasis of the

[1] Adams, W. E., and Livingstone, H. M., *Ann. Surg.*, 1932, **59**, 106.

obstructed lung. This method of producing massive atelectasis secures absolute rest of the part and shuts off the exit draining the lesion. It was determined to test the effect of massive atelectasis on abscess of the lung produced experimentally. Lung abscesses were produced in dogs by the Cutler-Holman technique. In 8 dogs emboli were introduced containing mixed pyogenic organisms. In a second group of 12 dogs, emboli containing human tubercle bacilli were lodged in the pulmonary lobes. Cauterization of the bronchi of the embolized lobes was performed immediately following embolization. Two weeks later bronchoscopy was repeated to determine if complete stenosis had occurred. In the event of incomplete stenosis, cauterization was repeated. Of the 8 dogs in the first group, 4 were cauterized and 4 used as controls. Of the 12 dogs in the second group, 8 were cauterized and 4 used as controls.

Results: Group I. Pyogenic Abscess—8 dogs: Complete stenosis was obtained in 2 dogs after cauterization had been repeated 4 and 6 times respectively. This occurred 3 and 4 months after embolization, by which time the abscess had healed with cessation of drainage through the bronchus.

Group II—Tuberculous Abscess—12 dogs: Complete stenosis accompanied by massive atelectasis occurred in 1 dog in 13 days with 1 cauterization; in 1 dog at the end of 30 days with 2 cauterizations; and in 2 dogs at the end of 2 months with 3 cauterizations. Three dogs died of complications from the abscess and in 1 dog incomplete stenosis resulted with 2 applications of the cautery. No cavities were found in the collapsed lobes at the end of 6 weeks and 8 weeks. Of the 4 controls, 2 presented cavities 1 cm. in diameter at the end of 8 weeks while the remaining 2 exhibited healing lesions 1½ cm. in diameter at 8 and 9 weeks respectively.

Conclusions: 1. Attempted occlusion of bronchi draining a pyogenic lesion was attended by little success. 2. Pyogenic abscess cavities healed more slowly where stenosis was attempted than where it was not attempted. 3. Complete stenosis of a bronchus draining a tuberculous process was produced in 4 of 5 animals, and with fewer applications of the cautery than was necessary in pyogenic infections. 4. Tuberculous lesions healed more quickly in the collapsed lobes (without drainage), than in the inflated lobes.