

porphyrin was added to 150 cc. of liquid ammonia along with 0.1 gm. of metallic sodium. The solution immediately turned blue and remained so for 1½ hours. A few cc. of gas came over during the following 45 minutes, apparently from the pyrrol groups themselves, then all evolution of gas ceased. Hematoporphyrin alone apparently does not have a catalytic effect on the following reaction:  $\text{Na} + \text{NH}_3 = \text{NaNH}_2 + \frac{1}{2} \text{H}_2$ . It is worthy of note that hemoglobin beside its remarkable property of very quickly forming oxyhemoglobin can have such a powerful catalytic action on the system just mentioned and to be able to continue that action in the presence of one of the strongest reducing agents known, the solvated electron.

We think of the marked catalytic activity of the hemoglobin as being due to the presence of the iron in the porphyrin ring, and to that metal's ability to accept electrons from the metallic sodium, thus becoming reduced, and to pass them on to the hydrogen, thereby becoming oxidized again and ready to repeat the cycle.

### 7198 P

#### **Effects of Partial Adrenalectomy on Experimental Diabetes and on Sensitivity to Insulin.**

B. O. BARNES, V. B. SCOTT, H. W. FERRILL AND J. M. ROGOFF.

*From the Department of Physiology, University of Chicago.*

In view of evidence (1) that the severity of pancreatic diabetes is greatly diminished by previous hypophysectomy, (2) that hypophysectomy leads to some atrophy of the adrenals and (3) that the adrenals are in some way connected with carbohydrate metabolism, it seemed necessary to reinvestigate in more detail the effects of adrenalectomy on pancreatic diabetes. The literature will not be reviewed here but it is sufficient to say that the reports have been conflicting and inconclusive. Nine dogs have been used in our studies, 5 of which have had the pancreas removed.

In 3 cases the adrenal on one side was removed first and the pancreas removed 10-18 days later. These animals received no insulin and 2 of them are still alive, now 22 days since pancreatectomy. The third animal died from an infection. These animals showed a mild glycosuria but not as severe as is usually found after extirpation of the pancreas. Within a few days the sugar excretion fell to

the level found in dogs following hypophysectomy and pancreatectomy. One animal failed to eat part of the time (probably due to a respiratory infection) and under these circumstances no glycosuria was present. In 2 dogs the pancreas was removed first and the animals put on a constant diet with insulin twice daily. Later, one adrenal was removed and in one case the quantity of insulin necessary to maintain the same degree of slight glycosuria was approximately one-half as great as before the adrenalectomy. In the other animal insulin was stopped after the removal of one adrenal and the glycosuria was only mild. The animals are gradually losing weight and becoming weaker, although they apparently feel well and have good appetites. The fasting (overnight) blood sugar of these animals varied from 82 to 290 mg. per 100 cc.

Four other animals from which one adrenal had been removed were injected subcutaneously with 0.5 units of insulin per kg. Three of these animals showed convulsions within  $3\frac{1}{2}$  hours. They were soon relieved after the oral administration of glucose. The fourth animal and a normal control which received 1 unit per kg. showed no external symptoms of hypoglycemia.

These results, although not extensive enough to draw conclusions, are similar to what is found after hypophysectomy. The experiments are being continued to see the effects of loss of more adrenal tissue, to test the possibility of the pituitary exerting its influence through the adrenals, and to study other related problems.

## 7199 P

### Heterotopic Formation of Dentine and Enamel by Transplantation of Epithelium and Pulp Tissue.

C. B. HUGGINS, H. R. McCARROLL AND A. A. DAHLBERG.

*From the Department of Surgery, The University of Chicago.*

Epithelium surrounding the base of the permanent cuspid teeth, and pulp tissue in 18 young dogs were transplanted to the fascia of the abdominal wall as an autogenous graft, and after 9 to 31 days there was found newly formed enamel, dentine, cementum and bone.

*Method.* The epithelium was obtained in the following way: Under ether anesthesia a cuneiform osteotomy of the mandible, including the deciduous cuspid tooth was made in dogs of between 3 and 6 weeks of age and this allowed access to the permanent