

was no increase in the hair on the graft. Two other rats, both hairless, one a litter-mate and one 111 days of age, were fed the same amount for the same length of time, but no change in the hair was apparent. The hairless skin of my rats may have been too old to be stimulated, since the youngest rat was 59 days old, whereas rats 30 days old were used by Martin and Gardner. However, Roberts,⁵ using rats 28-42 days old, has repeated the work of Martin and Gardner and obtained no secondary growth on the hairless rats.

Summary. The results seem to indicate that the factors for hereditary hairlessness of the rat reside principally in the skin. The effect of operation on the hairless rat is to stimulate a secondary growth of hair, the amount of growth decreasing with the age of the rat. This growth is not confined to the site of operation but occurs over the whole body.

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Diagnosis of Pancreatic Disease; Limitations of Present Blood Diastase Test, Suggestion for Increasing its Effectiveness.

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Although the diastatic activity of the blood was known as long ago as 1846¹ it was not until Wohlgemuth² developed his method of quantitative estimation that the subject began to receive the attention of clinicians. Since that time other more accurate methods have been devised for the micro-estimation of diastase in blood and urine.³

Clinical experience with the method in the diagnosis of pancreatic disease has led to the conclusion that it is one of the most valuable diagnostic procedures available particularly in acute pancreatitis.⁴ Unfortunately, the value of the test is limited by the fact that the rise and subsequent fall in the concentration of the diastase after mechanical obstruction of the pancreatic ducts takes place over a comparatively short period of time, usually 2 to 3 days to attain a maximum height and 10 to 14 days to recede to normal.

With this restriction in mind, it is obvious that normal values

⁵ Roberts, E., *J. Biol. Chem.*, 1937, **118**, 627.

¹ *Magendie Gaz. med. de Par.*, 1846, **1**, 73.

² Wohlgemuth, J., *Bromchem. Z.*, 1908, **9**, 1.

³ Somogyi, M., *J. Biol. Chem.*, 1938, **125**, 399.

⁴ Cole, W. H., *Am. J. Surg.*, 1938, **40**, 245.

many times cannot be satisfactorily interpreted. Not only is this frequently true in the case of acute pancreatitis which may be seen by the clinician too late to obtain evidence of abnormal diastatic activity, but it is commonly the case, with such lesions as chronic pancreatitis, cysts and neoplasms where the diastase determinations are often of little or no value whatever.

Accordingly, the following experiments were carried out in an effort to overcome this inherent difficulty of the test. Dogs varying from 10 to 15 kg in weight were anesthetized with sodium-pentobarbital (nembutal) gr $\frac{1}{2}$ per kg of body weight intravenously and local infiltration with 1% solution of novocain. A mid-line abdominal incision was made and a rubber balloon was introduced through an incision in the stomach wall and placed into the duodenum just past the pyloric ring. The balloon was then distended with water to a pressure of 90 mm of Hg. Oxalated blood samples were taken at intervals and the diastase concentration determined by the Somogyi method. At the onset of the experiments crude Secretin was given intravenously in doses of 0.5 cc per kg of body weight to provoke a good flow of juice.

In 2 experiments in which the balloon was distended, the diastase showed a rise of 250% in one hour in one and 380% in an hour and a half in the other. A control animal with the balloon left undistended showed no change in the diastase level after 2 hours; another control in which the common duct was ligated in order to exclude the possible influence of coincident biliary obstruction on the diastase level showed a rise of only 150% in 2 hours. The pancreatic ducts of a dog were then ligated as a preliminary procedure and time was allowed for development of atrophy and fibrosis in the gland. Then the experiment of occluding the duct openings by means of the distended balloon was repeated. No rise in the curve of the blood diastase was noted. The procedure had no harmful effect on the animals. Clinical application of these observations to the human has not yet been made, although we have carried out the introduction of the Miller Abbott tube and balloon into the duodenum under fluoroscopic control and have distended it without causing the patient distressing symptoms.

While it would be premature to forecast the clinical application of these observations, it may be suggested that an index to pancreatic function could be obtained in this manner. A normal pancreas might be expected to show a certain rise in the serum diastase after temporary obstruction by the balloon, whereas the serum diastase in cases of disease of the pancreas might remain unaltered or be changed but slightly.