was still full in spite of the fact that elasticity and variations of intra-abdominal pressure had had full play. A fatty meal was given and in 5 hours a considerable quantity of the iodized oil had passed from the gallbladder into the rubber bag. This experiment indicates that a part of the emptying process is due to muscular activity of the gallbladder wall. Other experiments, likewise, demonstrate that changes of intra-abdominal pressure play a minor rôle in the emptying of the viscus. We believe, however, that muscular contraction is not the only factor involved, and that elasticity and the ebb and flow of fresh bile from the liver play an important part.

The presence of pancreatic juice was found necessary for the fatty meal to cause emptying of the gallbladder. The intravenous injection of secretin, insulin and pancreatic juice did not produce a discharge of iodized oil from the gallbladder, nor did alcoholic or acid extracts of the gallbladder wall.

Although no one has observed contractions of the common duct in the human, it is of interest that they can be easily observed in the pigeon. They are of definite peristaltic nature, being preceded by a relaxation phase which travels rapidly down the duct. Iodized oil passes from the common duct of the cat, even if the hepatic and cystic ducts are ligated. This may possibly be due to muscular contraction.

It is well known that water, iron salts, and a few other substances are absorbed by the wall of the gallbladder. We have shown that sodium iodide is rapidly absorbed. This can be demonstrated by the X-ray.

[1] Copher, Glover H., Kodama, Schuichi, and Graham, Evarts A., *J. Exp. Med.*, 1926, xliv, 70.

[2] Graham, E. A., *Surg., Gyn. and Obst.*, 1927, xliv, 153.

[3] Boyden, E. A., *Anat. Rec.*, 1926, xxx, 333-363.

[4] Sossman, M. C., Whitaker, L. R., and Edson, P. J., *Am. J. Roent, and Rad. Therap.*, 1925, xiv, 495.

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The Blood Amylase in Pancreatic Disease.

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The blood amylase of a number of patients was studied, including a few in which pancreatic disease was suspected from the abnormal amylase findings. In each case the suspicion was verified by the

finding of definite pancreatic disease at operation. In 30 patients convalescent from or suffering from other diseases the blood amylase was found to be rather uniform, the values varying between 4, 5 and 6.0 units.

The method used in measuring the amount of amylase in the blood has been described elsewhere[1] and involved the use of the viscosimeter. One variation was found necessary. A new batch of starch was found to yield a more viscous solution, so that to prepare a suitable fluid for use in the viscosimeter a 3% solution was found appropriate instead of 7%, as previously described. The relative values remained unchanged, though comparison between these values and those already published for dogs cannot be made.

TABLE I.
Blood Amylase in Patients with Pancreatic Disease.

Pt.	Age	Amylase units	Diagnosis	Remarks
J. C.	55	0.5	Ca Pancreas	Marked jaundice. Hard growth involving head of pancreas and atrophy of rest of gland. Cholecystenterostomy done.
W. F.	31	7.8	Chr. Pancreatitis	Marked jaundice.
		25.0		Two weeks later; jaundice much less. Operation revealed chronic cholecystitis and a hard indurated pancreas.
R. G.	28	15.0	Pancreatic Cyst	Large epigastric tumor. Marsupialization of cyst at operation with evacuation of 2 liters of clear fluid containing 300 units of amylase.
		6.1		4 days post op. Recovery uneventful.
		4.5		Six months later. Operation for gall stones showed pancreas small and somewhat hard.
A. F.	45	50.0	Pancreatic Cyst	Large epigastric tumor. Marsupialization at operation with evacuation of 3 liters of dark brown odorless fluid. Content of amylase 1200 units.
		10.4		Two weeks post op. Recovery uneventful.
P. S.	27	23.	Acute Pancreatitis	Two day post op. Fat necrosis at operation.

The amylase content of the blood in two cases of pancreatic cyst, one case of acute pancreatitis, one case of cancer of the pancreas and one case of chronic pancreatitis was studied. Two of these cases had jaundice. This in itself is incapable of influencing blood amylase, for 5 other cases of jaundice due to common duct obstruction all yielded normal values.

[1] Elman, R., and McCaughan, J. M., *Arch. Int. Med.*, 1927, xl, 58.