TABLE I.

		Average Distance Traversed (% of total length)
I	Controls	45
II	Olive oil	55
III	Castor oil	70
IV	*Ruvettus* oil	68
V	Saponifiable fraction	
	a. Saturated compound—ethyl oleate	63
	b. Unsaturated compound—ethyl hydroxy oleate	59
VI	Unsaponifiable fraction	
	a. Saturated compound—cetyl acetate	77
	b. Unsaturated compound—oleyl acetate	74

The most active compound from the purgative standpoint was *cetyl acetate*. The action of cetyl alcohols and their esters were studied. Eight hexadecanols were prepared by Dr. Cox and Professor Reid, and the 8 alcohols with their 8 acetates were obtained in small quantities but in pure form. Various hexadecanols and their acetates were examined by the rat method and also on isolated segments of cat's intestine by a method devised by the authors, to be described elsewhere. The various hexadecanols and their esters differ from each other pharmacodynamically both *quantitatively* and *qualitatively*. The 2 compounds which were strikingly stimulating to the intestinal movements are 2 ethyl-2 dodecyl-ethanol 1; 2 hexyl-2 octyl-ethanol 1.

A roentgenological investigation of all the compounds studied is in progress and results obtained so far completely agree with the findings described above.

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A Method for Interval Determinations of Liver Glycogen in the Same Dog.

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(Introduced by E. A. Graham.)

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In most experiments heretofore described for the study of changes in liver glycogen, a series of animals are used, one of which is sacrificed at the end of a given period. Cori[1] has described a method of obtaining several samples of liver from the same animal for the determination of liver glycogen. The advantage of repeated obser-

[1] Cori, C. F., Cori, G. T., and Pucher, G. W., *J. Pharm. and Exp. Therap.*, 1923, **21**, 377.

vations in the same animal is that the individual variations in liver glycogen between animals of the same species are avoided. In normal dogs, kept and fed under uniform conditions, we have found this to be from 1.3% to 7.2%. Varela, Duomarco and Munilla[2] found it to be from 0.74% to 4.68%. Similar differences are found in other animals.

To carry out repeated determinations of liver glycogen at stated intervals on the same animal, it seemed necessary first to bring a part of the liver to the body surface, where pieces could be excised. This is done as follows: Intra-tracheal anesthesia is given with the Erlanger positive pressure apparatus and through an incision on the right side, parallel and about 5 cm. anterior to the spine, the 4 lower ribs are then removed. The pleura and diaphragm are next opened in the same axis. The corresponding cut edges of diaphragm and pleura are sutured to each other, thus closing the pleural cavity. The thin attachments of the liver are then cut, allowing mobilization of the 2 lateral lobes or more. Any other procedure on other abdominal organs can be carried out at the same time, through the same incision, such as ligation of the bile ducts, removal of the pancreas, production of intestinal obstruction, etc. The liver is brought to the surface more by pushing in the collapsed chest wall than by traction. The skin and the subcutaneous tissues are closed with just enough sutures to keep the exteriorized portion of liver from slipping back. About 100 gm. of liver can thus be brought to the surface. This is dressed with vaseline gauze and a dry pad, which are changed daily.

In our experiments, small pieces of liver weighing about 1.5 to 2 gm., are excised from the exposed liver and immersed immediately in about 2 cc. of 60% KOH, which is contained in a 50 cc. Pyrex graduated centrifuge tube, all of which have been previously weighed. All are weighed again to determine the exact weight of the liver sample. From here on the method is that of Pfluger and the sugar is determined by the Shaffer-Hartman method. The mass of liver which is exteriorized is covered with visceral peritoneum and inasmuch as the latter is free of pain fibers, the liver can be handled and pieces removed without any sensation of pain or discomfort to the animal. This makes it possible to omit an anesthetic and so avoid the effect of the latter on carbohydrate metabolism. The bleeding from the cut surface is easily controlled with pressure. In this manner a complete experiment can be run on one animal, the control

[2]Varela, B., Duomarco, J., and Munilla, A., *Z. f. d. ges. Exp. Med.*, 1930, **72**, 457.

value of liver glycogen being that found in the liver sample before the administration of the glucose, adrenalin, or insulin.

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Studies of Renal Metabolism.

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A kidney is drawn out of the body cavity of a dog and sutured under the skin of the back, with the renal vein located in such a position that it can be punctured through the skin with a needle. The metabolism of the kidney has been studied by simultaneous analyses of arterial and renal bloods and of urine secreted during the observation periods. The rate of blood flow through the kidney has been estimated by comparing the amount of urea removed from a unit volume of blood in passing through the kidney with the amount excreted per minute. In most of our experiments only one kidney at a time has been studied; one is brought out under the skin, and the other is removed, in order to simplify the experiments. In a few controls in which one kidney was brought out and the other left *in situ* excretion was similar in both.

Through a single kidney in dogs of 15 to 20 kilos weight the blood flow is in the neighborhood of 200-250 cc. per minute. Increasing the urea content of the blood as much as 10-fold does not significantly accelerate the blood flow. The urea excretion increases 10-fold, but the increase is due to the fact that the proportion of blood urea removed during perfusion of the kidney remains constant, so that the amount removed per liter of blood passing through the kidneys rises in proportion to the amount present in the blood. This explains the manner in which the blood urea clearance is kept constant during wide fluctuations in blood urea content.

The proportion of oxygen removed from the blood by the kidney is rather low, 10 to 20% of the arterial oxygen content as a rule. Increasing the work of the kidney in the form of urea excretion does not markedly affect the oxygen consumption.

Occasionally we have noted temporary cessation of removal of urea from the renal blood. Such cessation apparently occurs as the result of trauma in tapping the renal vein. The cessation appears to be an all or none phenomenon. When it occurs the urea content of the renal vein rises as high as, and sometimes higher than, the urea content of the arterial blood.