TABLE I. Plasma PBI^{131} Levels 24 Hr Following Injection of I^{131}.

Group	No. animals	24 hr PBI^{131}
SHAM	4	29.9 ± 8.2
AXILLARY TRANSPL.*	3	23.2 ± 2.9
THYROIDECTOMIZED*	6	3.82 ± 1.6
SPLENIC TRANSPL.*	7	12.2 ± 5.4

* Without demonstrable residual cervical thyroid tissue.

subjected to surgical thyroidectomy still contain iodine-concentrating tissue, we found that even minute residual fragments resulted in PBI^{131} values at or approaching control levels.

In evaluating the data presented by Bondy it is further to be noted that since the PBI level is the resultant of 2 processes, *i.e.*, delivery to and removal from the vascular compartment, the interpretation of hormonal delivery on the basis of such levels rests on the assumption that the "peripheral utilization" of the hormone is not significantly altered. Knowledge concerning this latter parameter of thyroid function is limited. The data presented herein might thus be interpreted as representing an increased rate of hormonal utilization despite an unaltered delivery from the thyroid, through the hepatic circulation, to the systemic circulation. Further studies are necessary for a more complete clarification of the qualitative and quantitative role of the liver in the catabolism of thyroid hormone.

Summary. The role of the liver in the metabolism of endogenous thyroid hormone, labelled by I^{131} in splenic autotransplants has been studied in rats. Serial observations on the "functional take" of the transplants have been carried out. Data obtained by study of uptake and conversion of I^{131} and the resultant plasma levels of labelled protein-bound iodine indicate a partial removal or alteration of thyroid hormone by the liver under these experimental conditions.

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Composition of Urinary Calculi from Mink.* (19599)

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The occurrence of urinary calculi in mink is a problem frequently encountered on mink ranches. The incidence of urinary calculi is largely confined to 2 distinct periods of the year. In the spring calculi are found primarily in female mink during pregnancy or soon after whelping. The development of calculi before whelping is generally coincident with the presence of a large number of unborn kits. In the summer months calculi occur mainly in young male kits. In this country the occurrence of urinary calculi in mink appears to be limited primarily to the north central states. This regional difference in calculi formation may be related to the diet. In

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the Pacific Coast states, where there are relatively few cases of urinary calculi, the main constituents of the diet are fish and fish by-products. In the north central states, where the main component of the mink diet is horsemeat, there is a high incidence of urinary calculi. On some ranches calculi losses have been as high as 20% of the pregnant females. Although there has been an extensive qualitative chemical analysis of mink urinary calculi only a few calculi have been analyzed quantitatively. Sompolinsky(1) qualitatively analyzed 26 mink urinary calculi and classified 12 as pure magnesium ammonium phosphate, 13 as magnesium ammonium phosphate plus calcium, and one as magnesium ammonium phosphate plus calcium and urate. Smith and Hodson(2) qualitatively analyzed 6 urinary calculi and analyzed 5 calculi quantitatively. Of the calculi qualitatively analyzed 5 contained calcium, magnesium, phosphate and ammonia, while one contained only calcium, magnesium and phosphate. Their quantitative analyses of 5 mink urinary calculi indicated that the calculi were composed of magnesium ammonium phosphate and other magnesium phosphates. Calcium was present in small amounts in 2 of the 5 calculi.

In our studies on the urinary calculi problem in mink variation in the type of calculi found seemed to warrant a more extensive quantitative study of their composition. The calculi analyzed were obtained from mink ranches in Wisconsin.

Results. In the analysis of the mink urinary calculi, phosphate was determined by the Fiske and Subbarow method(3). Calcium was determined by the Clark-Collip modification of the Kramer-Tisdall method(4), and magnesium by the method of Denis(5). Ammonia was determined by dissolving a portion of the calculi in acid, micro steam distillation of the ammonia after the addition of strong alkali into 2% boric acid and titration with standard acid. All analyses were carried out in duplicate.

From their gross appearance mink urinary calculi may be divided into 2 distinct types—the hard, smooth, white calculi, and the friable, rough, colored calculi. The size of the calculi vary from sand-like particles to stones

TABLE I. Quantitative Analyses—Mink Urinary Calculi (Smooth, White and Hard Calculi).

Wt, g	% Ca	% Mg	% NH_4	% phosphorus
Pure $MgNH_4PO_4 \cdot 6H_2O$	0	9.9	7.3	12.6
1.44	2.2	8.7	—	11.8
1.59	2	8.5	6.5	11.6
1.91	1.9	8.2	6.5	12.8
1.63	1.6	8.9	6.3	12.1
1.48	1.4	9	6.3	12.2
.88	1.4	8.5	5.9	12.3
1.18	1.4	8.1	6.1	10.1
1.21	1.3	9.2	5.7	12.4
1.78	1.3	7.1	5.4	9.5
1.01	1.3	6.4	—	10.1
.49	.5	8.8	5.9	12.1
4.02	.2	9	5.2	12.5
.68	.1	9.1	6.5	12.2
4.31	.1	9.1	5	12
1.45	0	9.1	5.8	12.8
1.27	0	8.4	6	12.2

TABLE II. Quantitative Analyses—Mink Urinary Calculi (Rough, Colored and Friable Calculi).

Wt, g	% Ca	% Mg	% NH_4	% phosphorus
Pure $MgNH_4PO_4 \cdot 6H_2O$	0	9.9	7.3	12.6
.12	5.6	7.3	5.4	12.9
.06	4.1	6.9	—	10.8
.14	2.5	9	—	11.3
.44	2.3	8.9	5.8	11.7
.68	2	9.7	6.4	14.7
.12	1.5	9.5	6.6	12.1
.45	1.3	8	6.2	11.2
.84	1.3	8.4	6.4	11.8
.17	1.2	7.9	5.9	13.1
.56	1.1	8.9	6.3	12.1
.11	.9	9.1	—	11.7
.28	.3	9.2	6.2	11.8
.17	.2	9.8	6.3	12.6
.12	.1	9	6	11.8
.33	.1	8.9	6.1	12.4

weighing over 4 g. Chemical analyses of these 2 types of mink urinary calculi (Tables I and II) indicate that their composition is very similar. The main constituent of the calculi is magnesium ammonium phosphate hexahydrate ($MgNH_4PO_4 \cdot 6H_2O$). Small amounts of calcium phosphate and magnesium phosphate may also be present. The $MgHPO_4$ may have originated from the decomposition of $MgNH_4PO_4$. We have noted in our study of mink urinary calculi that the $MgNH_4PO_4$ constituent is unstable and is broken down into $MgHPO_4$ at temperatures less than 100°C. Some of the calculi analyzed were

over 3 years old and partial decomposition of the $MgNH_4PO_4$ constituent may have occurred. The presence of organic matter was noted in all calculi analyzed. The results of these analyses agree with the analyses of Smith and Hodson(2).

Discussion. Since the main constituent of the mink urinary calculi is magnesium ammonium phosphate the question of the pH of mink urine arises. This type of calculi is known to form in an alkaline urine. Vermeulen, Grove, Goetz, Ragins, and Correll (6) have reported that there is a sharp drop in the solubility of magnesium ammonium phosphate over the range of pH 6.0 to pH 7.5. Kubin and Mason(7) found that the pH of mink urine varied over the pH range 6.8 to 7.5. These figures indicate that conditions may be favorable for the formation of this type of urinary calculi.

Summary. Thirty-one mink urinary calculi have been quantitatively analyzed for calcium, magnesium, ammonia and phosphorus. The results of the analyses indicate that the main constituent of the calculi is magnesium ammonium phosphate. Small amounts of calcium phosphate and magnesium phosphate may also be present.

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Comparative Measurements of Temperature in Liver, Lung, and Rectum of the Rabbit.* (19600)

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Several investigators have studied the temperature of either the lung or the liver (1-4), but no systematic study of liver and lung temperatures in the same animal has been recorded. Thus, Nedzel(1) reported that in dogs the liver temperature averages 0.2°C higher than the temperature of the aortic blood, and Tanaka(2) has shown that in man the lung temperature is 0.5-1.0°C lower than the rectal temperature. In the present study the temperatures within the liver, the lung, and the rectum have been measured simultaneously, or within a few seconds, in the normothermic rabbit.

Methods. Seven rabbits, which had been maintained on an ordinary diet, were lightly anesthetized with pentobarbital given intravenously. A No. 40 copper-constantan thermocouple sealed into a No. 20 hypodermic needle (with the thermocouple junction at the bevel of the needle) was inserted through the anterior abdominal wall on the right side, at a point 2-4 cm lateral to the tip of the xiphoid process, into the parenchyma of the liver. A similar thermocouple was inserted into the parenchyma of the lung through the chest wall, on either the right or the left side, pushing the needle through the 5th or 6th interspace anterolaterally. The current was read on a Rubicon galvanometer (Model 3401-H). The accuracy of the method was

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