found as a complication. We wished to obtain the blood-urinary amylase ratios before nephritis set in, so that we could study the progressive change in the ratios from the incipiency of the kidney lesion. During the period of this study none of these cases developed acute nephritis. Yet, in 26 of the 35 scarlet fever patients there was a reversal of the ratio, suggesting that scarlet fever is usually accompanied by kidney damage of a degree insufficient to be observed clinically. At the same time, 18 cases of diphtheria and measles were studied; of these only 4 showed a ratio slightly below one.

Work is in progress to evaluate the amylase clearance as a possible kidney function test.

9190 P

Effect of Liver Extract on Thyroid Glands of Mice and Guinea Pigs.

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During experiments to test the effect of prolonged administration of liver extract on the blood-forming organs, attention was drawn to the thyroid gland by the hyperactivity and excitability of the animals so treated.

The thyroid glands of 20 mice, injected daily with from 0.1 to 0.5 cc. of concentrated liver extract* for from 14 to 480 days, showed changes after 6 or 7 weeks of injection which progressed slowly but steadily as long as the injections were continued. These alterations consisted of: (1) Localized degeneration of several epithelial cells in some of the acini. (2) A general lowering of the height of the alveolar epithelium, associated with an increase in the amount of colloid contained in the acini. (3) Rupture of acini due either to pressure of an increased content of colloid inside the acinus or to isolated degeneration of the alveolar cells. (4) Accumulation of colloid material in the inter-acinar spaces, causing additional injury as well as compression, distortion, and separation of the acini. (5) A gradual increase in the amount of fibrous tissue in the stroma of the thyroid gland.

* Solution Liver Extract, Concentrated, very generously supplied by Eli Lilly and Co.

No very definite changes have been noted in the thyroid glands of 6 guinea pigs injected daily for from 9 to 60 days, with from 0.5 to 1.0 cc. of concentrated liver extract. Whether injections for longer periods, or of larger doses, will produce alterations similar to those noted in mice is under investigation at present.

While uninjected control mice showed none of the abnormalities noted in the experimental animals, it seemed possible that the thyroid changes produced by liver extract might be due to non-specific reactions which could also be elicited by extracts of other organs. Accordingly, a control extract was prepared from beef muscle, using the same method as that described for the preparation of liver extract.[1] To date, mice injected up to 90 days with this control extract have been studied. The changes produced in the thyroid gland are similar in character to those produced by liver extract, but they are considerably less in degree. It must be pointed out, therefore, that the thyroid changes described in these experiments cannot as yet be attributed to any specific substance in liver extract. It is quite possible that the difference in reaction between animals injected with control solution and those injected with liver extract are due to differences in the concentration of non-specific protein materials in the 2 solutions, or to some other non-specific factor. We hope to undertake experiments soon which will decide this point.

9191 P

Studies in Tissue Pressure.

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Although the part played by tissue pressure in the control of the movement of fluid between blood vessels and tissue spaces is but vaguely understood, recent studies appear to demonstrate that it is a significant factor.[1, 2, 3] The wide variations in subcutaneous tissue

[1] Liver Extract, Lilly, Concentrated solution, *N. N. R.*, 1936, p. 282.

[1] Landis, E. M., and Gibbon, J. H., *J. Clin. Invest.*, 1933, **12**, 105.

[2] Youmans, J. B., Wells, H. S., Donley, D., and Miller, D. G., *J. Clin. Invest.*, 1934, **13**, 447.

[3] Weech, A. A., Goettsch, E., and Reeves, E. B., *J. Soc. Exp. Biol. and Med.*, 1934, **60**, 63.