

mal cycles could be restored in thyroidectomized animals by replacement therapy.

Twenty-one young adult rats were thyroidectomized. Vaginal smears were made for varying periods before and after operation and following institution of thyroid feeding (.03 gm. to .06 gm. per day of desiccated sheep thyroid (Armour) added to the food). At the conclusion of the experiment the animals were sacrificed and the neck examined macroscopically for regenerated thyroid tissue. It was found, as in the case of previous workers, that changes in the cycle were not likely to occur if small remnants of thyroid tissue were left behind. In our group 12 animals had had complete extirpation of the gland. These constitute the basis of the present report.

Following thyroidectomy there was generally a single prolonged diestrus period which was attributable to the operative procedure and which was not counted in computing the averages. Complete removal of the gland was followed by a prolongation of the cycle in diestrus averaging one to 5 days. Four to 5-day cycles did occur, but at irregular intervals.

When small doses of desiccated thyroid substance were added to the diet there was a tendency for the cycles to return to normal both in duration and regularity. In most instances, however, the average duration was one day longer than the preoperative level.

When thyroid feeding was discontinued the irregularity and lengthening of the cycles tended to recur.

The number of animals in this series is small. The results, however, indicate a general tendency for alterations in the sexual cycle following thyroidectomy, to be restored toward the normal by replacement therapy with thyroid substance.

Further work is in progress to evaluate the thyroid ovarian relationship.

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Carbohydrate Matrix of the Epithelial Cell Inclusion in Trachoma.

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Since the discovery by Prowazek and Halberstaedter of the epithelial cell inclusion in the conjunctiva of patients with trachoma, a voluminous literature has appeared on this structure. The great

majority of the reports have been devoted to affirming or denying that the inclusion body is actually the causative agent of the disease, and little has been done on its composition and nature. The present study, therefore, was undertaken to ascertain certain chemical characteristics of inclusion.

It was found that the inclusion body contains a carbohydrate to a great extent so that when preparations are flooded with Lugol solution, the inclusion gives a sharp color reaction and appears as reddish brown or dark amber against the contrasting yellow background of the epithelial cell. Evidence has been obtained which indicates that the carbohydrate is glycogen, and that it exists in part as a matrix or diffused throughout the inclusion. This evidence consists of (1) preparations of glycogen fixed on a slide with glycerine exhibit similar staining reactions; (2) fading or disappearance of color of iodine-stained inclusions in unfixed preparations on heating, but reappearing with cooling; (3) disappearance or fading of color reaction in 12 to 18 hours in unfixed preparations without reappearing even after restaining with iodine, thus showing solubility of the color reacting substance in water or saline, in contradistinction to amyloid which may give a similar reaction to iodine; (4) rapid fading of the stained inclusion in fixed preparations when treated with concentrated H_2SO_4 or HCl , both of which intensify the iodine-stained amyloid; (5) digestion and disappearance of inclusion in fixed smears under the action of saliva; (6) in mountings of epithelial scrapings in very weak iodine solution, the red-brown color of the epithelial inclusions disappears when diluted ammonia water is allowed to pass under the cover slip, just as a glycogen solution in the test tube colored with iodine solution will lose its deep red-brown color on addition of ammonia. The inclusion in unfixed cells stains well with brilliant cresyl blue and carmine red. The inclusion appears to be composed of granules suspended or embedded in the carbohydrate matrix. Some inclusions may contain many more granules than others.

This report will appear *in extenso* in a forthcoming number of the *American Journal of Ophthalmology*.