diagnostic purposes, initial observations should employ trials at the three iodine strengths to demonstrate the full potentialities of the procedure.

Certain precautions must be observed. Fresh Lugol's solution should be prepared weekly, and the MIF formula should be discarded after 6–8 hr usage. To date general staining failures have invariably been due to failure to observe these two precautions. It should also be emphasized that individual degenerate organisms occur in all stools, and in increasing numbers when stools are not examined promptly after passage. Such organisms will not take an acceptable stain with this technique or with any other staining procedure. Freshness of the stool specimen is therefore all-important for good results.

Influence of Testosterone on Nucleic Acid Phosphorus of Rat Seminal Vesicle

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Few data exist in the literature on the nucleic acid content of hormone-controlled organs (*1, 2*). None are found on androgen effects on male accessory reproductive organs. In this paper we wish to report the effect of testosterone propionate on the nucleic acid phosphorus content of rat seminal vesicles.

Rats with a mean weight of 220 g (range 150–280 g) were used. The animals were divided into three groups. Group I consisted of control rats, group II of rats castrated 8 days previously, and group III of castrated rats which, after 8 days, were injected with four 5-mg doses of testosterone propionate in oil on alternate days, and sacrificed on the ninth following day.

Histological study demonstrated that castration produced an intense cell atrophy, reversed by testosterone administration, as described by Moore and coworkers (*3*).

Animals were killed by a blow on the head, both seminal vesicles weighed on a torsion balance, and homogenized with distilled water in a glass homogenizer. Ribonucleic acid phosphorus (RNAP) and desoxiribonucleic acid phosphorus (DNAP) were determined in 0.8-ml aliquots of 2% homogenates by Schmidt and Tannhäuser's method (*4*), as modified by Davidson *et al.* (*5*). Phosphorus determinations were performed, according to Pereira (*6*), with some modifications. Reproducibility of the method used was tested, and variation coefficients around 3.5% for DNAP and 5.0% for RNAP were obtained.

Significance of differences between the means of the three groups was studied by the F test (*7*), and that of pairs of means by the t test (*8*). Values of F and t corresponding to probabilities of 0.01 or less were considered as indicating statistically significant differences between the means.

Data obtained are presented in Table 1. F tests on data of each of columns 2, 3, and 4 showed that they are samples of different populations; t tests for pairs of means of each of columns 2, 3, and 4 indicated statistically significant differences, except for the DNAP means for groups I and III ($P > 0.2$). These results cannot be due to modifications in the water content of the seminal vesicles, as the ratio dry wt/wet wt was found to be similar for the three groups.

The greater DNAP content of seminal vesicles of group II (castrated) animals as compared with those of the two other groups is probably due to cell atrophy, with increase in cell and nuclear population per unit weight. The decrease of RNAP and RNAP/DNAP ratio in seminal vesicles of group II (castrated) rats, and their higher values in group III (castrated and injected) rats, as compared with group I (control) rats, are in agreement with the views of Brachet (*9*) and Caspersson (*10*) on the relation between ribopolynucleotides and protein synthesis. It is concluded that testosterone propionate can influence nucleic acid phosphorus content of rat seminal vesicles.

TABLE 1

NUCLEIC ACID PHOSPHORUS CONTENT OF CONTROL, CASTRATED, AND CASTRATED TESTOSTERONE-INJECTED RAT SEMINAL VESICLES

Group	Col 1	Col 2	Col 3	Col 4
	Mean wt of seminal vesicles (range)	Mean DNAP* content (range)	Mean RNAP* content (range)	Mean RNAP/DNAP ratio (range)
I Control (7 rats)	220 (130–329)	25.4 ± 2.45† (16.7–31.4)	48.5 ± 14.15† (29.0–71.7)	1.94 ± 0.51† (1.07–2.45)
II Castrated (8 rats)	96 (48–209)	46.9 ± 8.22 (35.1–61.0)	25.4 ± 2.90 (21.6–30.2)	0.55 ± 0.08 (0.44–0.65)
III Castrated and injected	380 (292–461)	29.3 ± 1.78 (21.1–36.1)	77.2 ± 9.45 (65.2–87.6)	2.67 ± 0.25 (2.34–3.09)

* Micrograms/100 mg fresh weight.
† Standard deviation.

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A New Concept of the Pathogenesis of Ulcerative Colitis[1]

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Although much has been written of the pathologic changes in the large bowel of patients with ulcerative colitis, little evidence of the specificity of the lesion has been presented to date. The purpose of this paper is to describe certain distinct changes in the connective tissue of the colon which appear to be of fundamental importance in the pathogenesis of the disease. We suspect that ulcerative colitis falls into that group referred to as collagen disease.

Biopsy material taken during proctoscopic examination from a series of patients, both normal and with ulcerative lesions of the bowel, were frozen, dried, and mounted according to the method described by Gersh and Catchpole (*1*). The tissue was then treated with leukofuchsin after exposure to periodic acid, as described by Hotchkiss (*2*), except that care was taken to adjust the periodate leukofuchsin and wash solutions to a pH of 3.5, a modification suggested by Johnson and Permutt (*3*). Other frozen dried sections were viewed with the phase contrast microscope, thereby eliminating reagents which might alter the morphology. Similar sections were treated with aqueous 0.05% toluidine blue (National Aniline).

Biopsy specimens also were fixed in 10% formalin for hematoxylin eosin and reticulum stains.

The sections of biopsy material from patients with ulcerative colitis revealed a virtual absence of the homogeneous ground substance of the basement membrane of the epithelial cells. The reticulum of the basement membrane was present but was frequently fragmented.

The epithelial cells of the mucosa were morphologically intact, as was the intercellular cement substance, but in many areas the mucosa had separated from the underlying connective tissue. In the intervening space a homogeneous, Hotchkiss-positive, metachromatic material was observed. Such areas were often free of inflammatory response. Intracellular epithelial polysaccharide in the diseased tissue was dispersed rather than polar. In the lamina propria and submucosa there was an accumulation of homogeneous, Hotchkiss-positive, metachromatic ground substance which proved to be water-soluble.

With phase microscopy (done by Solbert Permutt) the basement membranes are seen as bright areas and are considerably thicker than in those sections treated with reagents (Fig. 1). In the ulcerative colitis epithelium these areas are absent.

The question arises as to whether the changes are merely the result of an inflammatory process regardless of etiology. Gersh and Catchpole (*1*) have described the disappearance of the basement membrane in rabbitskin after the subcutaneous injection of turpentine. Examination of the bowel of one patient with active amebiasis, in which there was profound inflammation with considerable necrosis, indicated that the basement membranes of the epithelium were intact (Fig. 1, *D*). A similar finding was noted in a patient with lymphopathia venerium with concomitant colitis. Further studies were made during experimental traumatization of the bowel of a dog with an electrocautery, biopsy specimens being taken during the height of the inflammatory process. The basement membranes remained intact even in areas where the epithelial cells were necrotic.

Last, the examination of a series of sections from ulcerative colitis patients who were responding well to ACTH therapy disclosed areas where the ground substance of basement membrane had returned, although surrounding regions remained free of this structure. The basement membrane was observed in areas where the inflammatory process as indicated by mononuclear infiltration was still quite evident.

The above-described changes in the ground substance of connective tissue of the bowel appear to be of primary importance in the pathogenesis of ulcerative colitis. As alterations in the basement membrane occur, the epithelium sloughs away from the submucosal connective tissue and secondary bacterial invasion results. Warren and Sommers (*4*), in a detailed study of the pathology of ulcerative colitis, have described two types, one primarily a vasculitis resembling periarteritis nodosum or thromboangitis obliterans, the second and most common variety the crypt abscess type. All our cases fall into this latter group. The crypt abscess form is described as primarily a surface phenomenon, with abscess formation occurring in the lumina of mucosal crypts rupturing through the epithelium into the submucosa. We believe the abscess formation can occur by virtue of the rupturing of the epithelium first, as a result of the changes described in the basement membrane, the epithelium thereby losing its property of barrier.

We suspect that the basement membrane plays a far greater role than maintaining the continuity of

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