SEX DIFFERENCES IN THE STRUCTURE OF *BOWMAN'S CAPSULE IN THE MOUSE*

SELYE,[1] in his observations on the effect of testosterone propionate injections in female mice, reports characteristic changes in the structure of the parietal lamina of Bowman's capsule. An instance of similar variation from the usual structure of the capsule in a normal adult male mouse was noted by Dr. Esther Carpenter of this department.[2] Comparative studies of a limited number of both adult and immature mice have enabled me to demonstrate that this modification in structure is correlated with sex.

In the kidneys studied, two quite different types of capsules were observed. The first type is that generally described in text-books of mammalian histology. The capsule consists of a double layer of flattened epithelial cells. The visceral layer of the capsule is closely applied to the capillary tuft, and the parietal layer forms a goblet-shaped structure which may or may not be separated from the visceral layer by the presence of filtrate in the lumen. The second type is similar to that described by Selye, and mentioned by a number of other workers. The visceral layer appears as usual: thin and closely applied to the endothelial walls of the loops. In the parietal layer of Bowman's capsule part or all of the cells which make up this outer layer are high cuboidal in type, with clearly demonstrable brush borders. In sections which show the neck and a portion of the convoluted tubule, the cuboidal cells of the capsule are indistinguishable from those of the tubule itself, and extend one half, two thirds, or often completely around the glomerulus to the point where the afferent and efferent arterioles are seen and where the parietal lamina is reflected back to form the visceral lamina.

In a differential count of capsules of the adult male mouse, 89 per cent. show the "abnormal" high-cuboidal epithelium which extends at least half way around the capsule. These altered malpighian corpuscles are not confined to the male. In a similar count of the normal adult female, 13 per cent. of all the corpuscles observed were thus modified. Comparisons of the histological kidney structure of the immature mouse of about 5.5-grams body weight show that same condition to exist, although to a markedly lesser degree. A differential count of the young male revealed only 25 per cent. of the capsules to exhibit the high-cuboidal cells of the parietal layer. In the immature female 13 per cent. were again found.

This preliminary publication will be supplemented by more extensive data in the near future.

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HAY VENTILATION

THE spontaneous heating of stored hay is a serious problem in many parts of the country, and large quantities of hay are damaged or destroyed each year as a result of self-heating, following storage with too high a moisture content. A dependable and economical method of preventing dangerous self-heating would result in enormous savings to the farmers of the United States.

The principle of the chimney (Fig. 1) was applied to stacks of under-cured hay in preliminary trials at the Western Washington Experiment Station in the summer and fall of 1939, to prevent, by naturally induced ventilation, the excessive heating of under-cured hay in storage. Ventilation was provided by an opening in the hay extending from the base upward through the top of the stack. In some stacks, the ventilator shaft consisted of an open frame-work of wood around which the stack was built, in others the ventilator shaft consisted merely of an opening moulded into the hay by a sheet-metal cylinder which was pulled upward as the stack was built. The only direct connection of the ventilator with the outside air was at the top.

A flow of air, induced through the mass of hay and up the chimney by the differential in temperature between the stack and the outside air, by wind movements, or by both forces working together, effectively

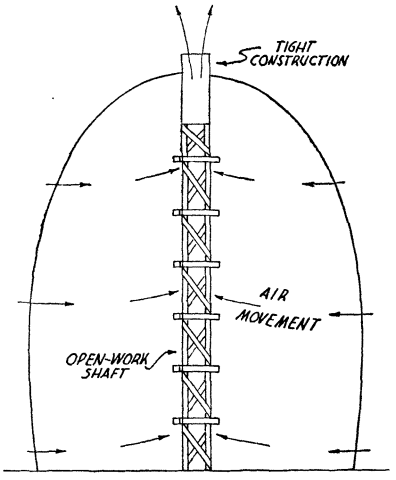

FIG. 1. Induced circulation of air through stacked hay using the principle of the chimney.

[1] H. Selye, *Jour. Urol.*, 42: 637, 1939.
[2] E. Carpenter, personal communications.