propylene glycol which was the vehicle used to administer daily doses of 10.0 mg (total dose 50.0 mg) to 2 other animals. The prostates of these animals were also completely atrophic.

In none of the 13 animals treated with 1.0 to 10.0 mg of desoxycorticosterone acetate daily was there any evidence of androgenic stimulation. The histological test used is based on the fact that androgens prevent regression of the ventral prostate after castration. This is the most sensitive of mammalian tests for androgenicity.[14] Therefore, we feel justified in concluding that desoxycorticosterone acetate is not androgenic in the rat.

## 11206 P

## A Surgical Experiment in Changing the Refraction of the Eye.

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The eye has been shortened surgically. There has been no attempt to lengthen it by surgical means. Mueller[1] reported a complicated operation for shortening the axis, by first performing a Kroenlein and then removing an eliptical segment of sclera from the exposed temporal side, 20 mm long and 8 mm to 10 mm wide, placing 5 scleral sutures and then puncturing the choroid before tying them to avoid injury. The object was the cure of detached retina, on the assumption of disproportion of the shrinking retina and the ocular shell. Recently, Lindner[2] proposed cutting the superior rectus muscle, excising an eliptical piece of sclera, the long axis equatorially, stitching the scleral wound so as to avoid injuring the choroid and sewing the severed muscle and conjunctiva back in place; later, doing the same thing below, and in turn, the two sides. In other words, 4 stages. Barkan[3] recently exhibited a moving picture of an operation where a strip of sclera was removed equatorially, after first severing the 4 recti muscles. This operation, most formidable, required over 4 hours to perform.

The method I am presenting is based on the principle that if a body with a given content, is shortened equatorially, it must expand

[14] Moore, C. R., Price, D., and Gallagher, T. F., *Am. J. Anat.*, 1930, **45**, 71.

[1] Mueller, L., *Beitrage zur Augenheilk.*, May-June, 1903, 459.

[2] Lindner, K., *Z. f. Augenheilk.*, 1933, **81**, 277.

[3] Barkan, H., moving picture shown at St. Louis University School of Medicine, October, 1939.

axially; and vice versa. It seems not to be necessary to excise, for example, a strip of sclera the entire length of the axis of the eye when one wishes to lengthen the eye by cutting out segments from the sclera longitudinally. In a dog's eye, which closely approximates the size and shape of the human eye, if one excises an eliptical segment of sclera 9 mm long and 1.5 mm wide from 4 opposite sides of the eye and brings the edges together by means of 3 sutures each, the eye will be lengthened approximately 2.5 mm to 3.0 mm. The refraction is changed from about normal to between 8 and 9 diopters minus. Mathematically, the distance from the cornea to the retina is increased by 1.27 times the width of one of the segments removed. Actually, it seems to be quite a bit more than this.

In shortening the eye, the decrease is 0.636 times the width of the segment removed, or about half as much as in the lengthening process. The segments are removed between the recti muscles, thus obviating the necessity of cutting the muscles.

The segments for shortening the eye can also be taken from the sides, between the muscles. The eye cannot be shortened, however, nearly as much as it can be lengthened by this method for obvious reasons. If indicated, there could be no objection to a later, additional, similar operation. Shortening the dog's eye by this method produces a scant 1 mm difference, or a refractive change of about 3 diopters.

Experiments are being conducted on live rabbits, which give the same changes in the refraction as were found in operating on excised eyes. Many eyes were spoiled before the technic could be perfected, since conditions on the living eye, such as changes in position, large size of the cornea, different arrangement and distribution of the long ciliary vessels and thickness of the sclera make it much more difficult to perform than on the human eye. Should one puncture the choroid, the results of the lengthening operation are apt to be spoiled, for the reason that the contents of the eye will no longer be the same, and consequently the axis is not forced to increase to the same extent. It makes very little, or no difference if this happens during the shortening process.

There are many problems involved which may alter or influence the ultimate success or failure of the procedure. One is that of increased intra-ocular tension. Will it gradually subside; and if it does, will that alter the physical aspect of the lengthened or shortened globe? Will the nourishment of the internal tissues be affected? Will the cut edges of the sclera eventually pull away? These are just a few of the aspects which must be considered.

The problem gives promise of developing into a valuable, practical surgical procedure.