

THE ACTION OF HYDROBROMATE OF SCOPOLAMINE UPON THE IRIS AND CILIARY MUSCLE.

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THIS special series of experiments, which were conducted upon a great number of young, slightly hyperopic eyes that showed but little or no muscular strain and but slight chorio-retinal irritation, are here offered simply as a contribution to the question of choice of cycloplegics in the careful and correct determination of ametropia; reserving the action of the drug in different amounts upon inflamed ocular tissue to a later and more extended communication.

In this work care has been taken to make these studies under as near the same conditions as possible. Each subject, who was a person of intelligence, was seated in such a manner, with his back to a window with northern exposure, as to place his eye before a well-lighted page of cleanly cut and distinct type that was devoid of any context. One eye was tried at a time, the other being carefully excluded from all participation by several turns of a roller handage. The exact horizontal width of the pupil, if it were round, or the length of its longer diameter, if it were oval, was carefully obtained. The utmost strength of the power of the ciliary muscles was next gotten in millimeter lengths.

One instillation of a perfectly fresh solution of a neutral specimen of the drug was now made. Notes as to the pupillary dilatation and the recession of the near point¹ were taken every two minutes for varying periods of time averaging from sixty to ninety minutes.

The moment that the half-dioptre type could not be recognized a convex lens of four-dioptres' strength was placed at about fifteen millimeters in front of the eye, care being taken in every instance to include it and its position as regards the nodal point of the eye in all of the ultimate calculations.

The accompanying chart, which is based upon those of Donders, is practically the same as that previously employed by the writer in other similar studies.²

Observations. 1. The mydriasis of a single instillation of the one-four-hundred-and-eightieth of a grain of hydrobromate of scopolamine is obtained in eighteen minutes.

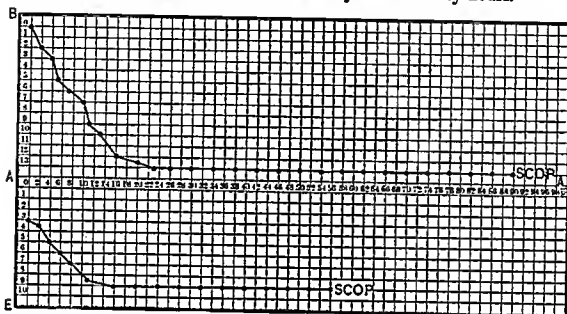
¹ In all of the estimations care was taken to obtain the exact equivalent refractive error before any of the tables were constructed and any of the data were formulated.

² Vide articles upon "The Comparative Action of Hydrobromate of Homatropine and of Sulphate of Atropine upon the Iris and Ciliary Muscle," and "The Comparative Action of Sulphate of Datura and of Sulphate of Hyoscyamina upon the Iris and Ciliary Muscle," in the July, 1881, and July, 1882, numbers of this JOURNAL.

2. The ciliary paralysis of a single instillation of the one-four-hundred-and-eightieth of a grain of hydrobromate of scopolamine is consummated in twenty-three minutes.

3. The single instillation of the one-four-hundred-and-eightieth of a grain of hydrobromate of scopolamine produces full dilatation of the pupil in every instance.

4. The dilatation of the pupil occasioned by the single instillation of the one-four-hundred-and-eightieth of a grain of hydrobromate of scopolamine remains *ad maximum* from twenty-four to thirty hours.



5. The total ciliary paralysis produced by the single instillation of the one-four-hundred-and-eightieth of a grain of hydrobromate of scopolamine is maintained from twenty-four to thirty-six hours.

6. By accurate observations made several times daily after the mydriasis and ciliary paralysis of the single instillation of the one-four-hundred-and-eightieth of a grain of hydrobromate of scopolamine are obtained it is found that the diameter of the pupil becomes normal in about seventy-two hours, and total re-establishment of the power of the ciliary muscle takes place in about ninety-six hours' time.

During the course of experiments with the drug it was noticed :

1. At the beginning of a few of the examinations there was a slight sense of conjunctival astringency which in a couple of instances amounted to a stinging sensation.

2. There were no appearances of constitutional disturbance; care, however, having been taken in every instance to prevent the passage of any of the liquid into the lachrymal passages.

3. In no instance was any apparent increase of a choroidal disturbance produced by the employment of the drug used.

Conclusions. 1. The early and complete paralysis of the ciliary muscle that can be obtained by the single instillation of the one-four-

hundred-and-eightieth of a grain of hydrobromate of scopolamine and the rapid and full return of the action of the muscle render this drug in this amount the most efficient and the most valuable cycloplegic that can be used for the proper determination of the total amount of ametropia.

2. The comparatively rapid return of the full dilatation of the pupil produced by the single instillation of the one-four-hundred-and-eightieth of a grain of hydrobromate of scopolamine to normal pupillary width renders the drug in this strength less objectionable than those drugs which by reason of necessarily greater strengths, to afford proper cycloplegic work, must be employed in amounts that give more permanent mydriasis.

3. The perfect freedom from injurious constitutional effects when the one-four-hundred-and-eightieth of a grain of hydrobromate of scopolamine is used renders the drug in this amount absolutely safe for employment in all cases in which total cycloplegia becomes necessary.¹

A CASE OF TUMOR OF THE CEREBELLUM IN WHICH OPERATION WAS REJECTED.

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TUMORS of the cerebellum, according to the statistics gathered by Mills and Lloyd, Starr, Gowers, and others, are among the most common of intracranial neoplasms. The proportion, in round numbers, appears to be about 25 per cent. They are especially frequent in children and young adults, in whom the prospects for long life should be, as a rule, the best. They are peculiarly disabling, entail extreme suffering, and, unless something can yet be devised for their relief, they are necessarily fatal. Their most common varieties are the tubercular and the gliomata and sarcomata, all of which are decidedly unfavorable, because, first, the tubercular form presupposes a constitutional infection; and, second, the gliomata and sarcomata belong to groups of neoplasms the members of which are likely to be recurrent and malignant. The causation of tumors of the cerebellum, just as of all other

¹ The writer here desires to express his thanks to Drs. Paul Gullford and A. S. Wilson, late resident surgeons at Wills Eye Hospital, and to Dr. Louis H. Préfontaine, Resident Surgeon at the New York Eye and Ear Infirmary, for valuable assistance given during these experiments.

In some of the later experiments the real and the reputed strengths of the drug used were found to vary so much that no reliance could be placed upon the scientific results. Practically with the drug as now daily employed by the author, the most certain results are obtained in some instances with the one-two-hundred-and-fortieth of a grain.