

think that this still leaves a great deal to be desired, however, to make these cases intelligible. I may say that in one or two of the cases I used the Maddox prism, and the result was practically the same as with the vertical diplopia test. I use the Maddox prism to test the vertical deviation, but not, as a rule, the lateral deviation.

In regard to the test at the reading distance, I long ago found that there is a great tendency to blend the two ends of the vertical line suggested by von Graefe, and the test that I have used is a small printed asterisk, without the vertical line, the object being to stimulate the accommodation and to avoid the fusion just referred to.

ON THE REMOVAL OF HARD CATARACT BY SUCTION.

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It is probable that every operator in the removal of cataract has occasionally experienced some difficulty in satisfactorily completing the final act of extracting the lens. In the endeavor to make the corneal incision just large enough to allow the lens to escape, he finds that he has misjudged the size of the nucleus. Whether an iridectomy has been made or not, he discovers that, although the lens engages properly in the wound, although every portion of the operation up to that point has been a perfect success, a difficulty now presents itself. For the lens will not advance. To press below either with an instrument or with the lid simply bends that portion of the cornea in deeper, and if, as usual, the spoon is used, the epithelial coat is abraded more and more, in proportion as the efforts to extract the lens are greater. On the other hand to press above on the sclerotic causes the additional danger of having the lens advancing suddenly beyond its widest diameter and then shooting up, to be followed by a gush of vitreous humor. It may be said that if the wound is

in proportion to the size of the cataract this complication would never occur. Quite true. But the fact that every operator occasionally loses vitreous at this stage demonstrates this difficulty of making the wound exactly proportional to the cataract. Every one, I think, has attempted at this point to catch the lens with forceps and draw it outward, and every one also has had the chagrin of finding that the soft semi-tenacious mass does not allow of any traction. Occasionally it is possible to lift one edge of the lens slightly out of the wound, and it is astonishing how little force is required to disengage it from its perilous position.

Many years ago, in one of Knapp's reports of cases, I remember the remark that it would be advantageous if we possessed a pair of forceps similar to those used by the obstetrician. I had often recalled this observation when confronted by the disagreeable difficulty to which I refer. A pair of forceps is of course out of the question, but some time since it occurred to me that a simple device might be employed to lift the cataract when it is thus partly projecting from the eye, and I put the suggestion into practice by applying in suitable time, a large dropping tube, which, acting as a partial vacuum, catches the protruding lens and in this way enables it to be drawn out further. An elaboration of this principle is what I wish to call attention to in this short communication. Taking the ordinary dropping tube I changed the curvature of the end and enlarged it; of late I have had some blown about the size of the ordinary dropping tube, but with an opening, sufficiently narrow in one direction, and long in the other, and with the end slightly curved on the longitudinal diameter, to enable these points to fit with a certain degree of exactness upon the edge of the partly projecting lens. A great deal depends upon the exact size and form of this opening of the tube. The addition of even a millimeter to the thickness of the glass at this point materially interferes with the usefulness of the instrument. The opening itself should be slightly curved upon the long diameter, the radius of the curve corresponding to the radius of the crystalline lens. It is absolutely essential that the glass should be as thin as possible. In this form the instrument serves the desired purpose, but it is

entirely useless if the opening is not of the proper size, or the glass too thick.

In obtaining the vacuum, various trials have been made with a large syringe provided with a spring on the interior, which pushed out the piston, and thus created a vacuum. An exhaust air pump of considerable pressure has also been used, but the easiest of all methods to obtain the vacuum is mouth suction. In other words, a piece of thick rubber tubing is fastened to the glass tube and the other end (furnished for convenience with a mouth piece) is held between the lips while the glass point is attached to the lens.

In using this suction tube it is usually sufficient to draw down the globe of the eye with the fixation forceps in the left hand and, holding the tube with the right, apply the end to the lens. With proper suction, the projecting portion at once engages in the mouth of the tube, is held fast to it, and a very slight traction is necessary to remove it compared with the pressure usually exerted on the cornea below or the sclerotic above. Should it be desirable to press at the same time that suction is used, of course the hand of an assistant is necessary; in which case it is safer to have him fix the globe while the operator presses with the left hand, and holds the suction tube in the right. Although this suggestion is simple, and the principle not entirely new, I think those who care to make the trial will find this a valuable assistance, in a moment sometimes exceedingly critical.

DISCUSSION.

DR. EMIL GRUENING, New York.—It has happened to every operator to find that the wound is not proportionate to the size of the lens. The most experienced operator may make the section too small, but he should be taught to enlarge it. This is simpler than to put a suction tube over the eye.

DR. A. MATHEWSON, Brooklyn.—A plan which I have sometimes followed with satisfaction where the lens has engaged and pressure seemed to endanger extrusion of the vitreous, has been to have an assistant with a double hook rotate the lens from one edge to the other. I do not try to introduce it into the anterior chamber. This has succeeded better than any other plan.