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REPORT OF ONE HUNDRED AND EIGHTEEN CATARACT EXTRACTIONS; WITH REMARKS.

DAVID WEBSTER, M.D., NEW YORK.

PRESENT herewith tabulated statistics of one hundred and eighteen cataract extractions, of which one hundred and thirteen were simple and the remaining five combined with iridectomy. These cases are consecutive, and include all uncomplicated senile cataracts operated upon by me in hospitals and in private practice since the publication of my last series of cataract extractions in the Transactions of the American Ophthalmological Society, vol. vi., part 1.

I greatly prefer the simple extraction in all ordinary cases of senile cataract. In my experience it is a less difficult operation to perform than the combined. The traumatism involved in the bruising of the iris during the extrusion of the lens seems to be less than that necessarily inflicted in excision of a portion of the iris. Moreover, the bleeding from the severed blood-vessels of the iris very frequently floods the pupil, obscures the lens, and renders the remaining steps of the operation more difficult. We are unable to see the anterior capsule while incising or lacerating it with the cystitome, and after we have removed the lens, we are left in doubt as to whether we have left any considerable amount of cortical matter behind. We are also absolutely sure that the eye thus operated upon cannot recover with that ideal result—a central, circular, movable pupil.

Nevertheless, there are certain conditions that seem to demand the combined operation as the one less likely to result in failure.

I prefer and follow the combined method:

1. In cases in which there is an evident predisposition to glaucoma, as when the fellow eye has already become blind with that disease.

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- 2. In cases in which the patient possesses little or no selfcontrol, so that not only is the operator greatly embarrassed during the operation by the failure of the patient to follow his directions, but subsequent prolapse of the iris is rendered probable by the unrestrained movements and manipulations of the patient.
- 3. In cases in which prolapse of the iris has occurred during convalescence from a simple extraction on the fellow eye, thus showing that the conditions favoring the occurrence of a prolapse are present in the eye to be operated upon.
- 4. In cases in which, after the simple extraction has been completed, it is found to be impossible to so replace the iris that the pupil is central and circular.
- 5. In those cases in which the pupil does not dilate to cocaine. Extrusion of the lens through a small pupil with an unyielding sphincter involves too much pressure for the good of the eye.

Immediately before being used for any operation upon the eye, the instruments are rendered aseptic by immersion in boiling water. The eyelids are carefully washed, inside and out, with a solution of bichloride of mercury, 1 to 5000. I generally wash all the contiguous parts with the same solution. I avoid using the bichloride solution after the anterior chamber has been opened, but cleanse the eye during the succeeding steps of the operation with a saturated solution of boric acid. We use both solutions warm at the Manhattan.

All my simple extractions were done under cocaine. I use a 4 % or a 6 % solution. Some of this is dropped into the eye at intervals of three or four minutes for three or four times. I prefer to wait until the pupil is about half dilated before commencing the operation. This generally occupies about twenty minutes after the first instillation of cocaine. I think it requires less pressure to extrude the lens than it does through an undilated pupil. On the other hand, if we wait until there is wide dilatation of the pupil, there is more danger of the iris falling before the knife and being cut in completing the section, thus defeating our object of making it a simple extraction. I always make the incision upward. I try to place

the entire cut in the limbus, and to make it include a little less than half the circumference of the cornea. I always stand behind the patient, holding the knife in my right hand in operating upon the right eye, and in my left hand in operating upon the left eye. The eye being held open by a spring speculum, I seize a broad fold of conjunctiva close to the lower border of the cornea, in the vertical meridian, with the fixation forceps, so as to have the eyeball under control. Having made the "puncture," which is always easy to place just where we want it, I carry the knife slowly across the anterior chamber, and as soon as its point becomes obscured behind the semiopaque limbus, I depress the handle a little and proceed to make the "counter-puncture." By this manœuvre the accident of making the counter-puncture too far back in the sclera may generally be avoided. As soon as the point of the knife emerges on the other side, I make a deliberately rapid thrust so as to carry the edge of the knife above the border of the pupil before the aqueous humor escapes, and thus I avoid cutting the iris. I watch the point of my knife and make sure that it does not prick the skin at the inner canthus. Should such an accident be awkwardly permitted to occur, the patient is apt to start, and the success of the operation is imperilled. Having safely landed the edge of the knife beyond the pupillary border, the remainder of the cut may be made less rapidly. Not more than two or three backward and forward movements of the knife should be necessary to finish the section, if the instrument be sharp. The use of a dull knife in making the section cannot be too much deprecated. It involves a discouraging amount of sawing and inflicts an unnecessary amount of traumatism. In completing the section, I like to make the slightest possible conjunctival flap. If the edge of the knife has to be turned forward to avoid cutting the iris, the section will be completed in clear cornea, and healing will probably be retarded by a grooving or furrowing of the wound. The next step is to open the anterior capsule of the lens. In many of my cases I endeavored to incise the capsule behind the upper portion of the iris, as done by Dr. Knapp of this city. When successful in this, I thought there was less tendency to adhe-

sion of the bruised pupillary border of the iris to the capsule during recovery, without evidences of iritis. But in my hands there were two objections to the method. Sometimes after incising the capsule in this way and then attempting to remove the lens, I found that I had not opened the capsule sufficiently and had to repeat the manœuvre, and once or twice I lost vireous apparently from having opened the capsule too near the suspensory ligament of the lens. I now open the capsule by several irregular incisions in the pupillary area, probably tearing rather than cutting it. I believe that a pretty thorough laceration of the capsule favors the easy exit of the cataract. Having opened the capsule, I immediately remove the fixation forceps and proceed to extrude the lens through the wound by means of pressure and counter-pressure with spoons. For pressure upon the cornea I use the hard rubber or tortoise-shell spoon; for counter-pressure on the scleral lip of the wound, I use the metallic spoon. With the latter very little pressure is made, sometimes none at all. Sometimes I have had to aid the delivery of a sticky lens from an inelastic eye by coaxing it out with a cystitome. The pressure upon the cornea with the tortoise-shell spoon should always be made intelligently. The pressure should be made upon the lens near its lower border, and should be so directed as to tilt the upper border forward and engage it in the wound. During its exit the lens should be followed by a steady, unintermitting pressure. The pressure should be lessened a little just before the cataract makes its final exit; otherwise vitreous humor may follow. I tried pressing out the lens by means of the eyelids. I finally abandoned it as an unsafe procedure. It is often quite impossible to make pressure with the lower lid at exactly the point where you want to, simply because you cannot get the patient to look in the right direction. If he looks up a little too far, you make your pressure on the sclera, or too near the lower border of the cornea, and run the risk of losing vitreous.

As soon as the lens is out of the eye I remove the speculum. If any cortical matter remains, I endeavor to work it out with the eyelids. What I cannot get out in that way I leave behind. I am under the impression that the cases in which I have

washed out the anterior chamber with a warm solution of boric acid have not done as well as they would had I let them alone.

I have been greatly aided in determining the presence or absence of cortical matter by the electric light concentrated upon the pupil by a strong convex lens. I have in at least one case removed a thickened and degenerated anterior capsule with iris forceps immediately after the extraction of the lens. The result was excellent. The pupillary space being clear, the next thing is to see that no iris, or other material, is left in the wound. In most cases the iris resumes its normal position spontaneously. When it does not, a little manipulation of the upper lid, or a little stroking of the wound with a cataract spoon will generally be sufficient. In some cases the iris repositor has to be introduced through the wound to push the iris back into its place. When it is found to be impossible to replace the iris so that the pupil is central and circular, it is better to perform an iridectomy at once, and so avoid a probable prolapse of the iris. Any shreds of coagulated blood may be removed from between the lips of the wound by means of the iris forceps. I generally run a small probe or spatula along the whole length of the wound in order to make sure that nothing is left in it. The lips of the wound should be left in complete coaptation.

Before dressing the eye, I usually instil a drop of solution of sulphate of eserine, gr. ½ to 3 i. I am inclined to think it makes very little difference, however, whether eserine or atropine, or a 10 % solution of cocaine, or nothing at all, is dropped into the eye after the operation and before applying the dressing.

I first smear the edges of the closed lids with bichloride-vaseline, I to 5000. Next I apply a bit of gauze to keep the fibres of cotton from getting between the eyelids, then a properly shaped mass of absorbent cotton, a thin flannel bandage, and over all, Ring's ocular mask. The patient is put to bed, and generally prefers to remain there till the morning of the second day, when the bandage is removed and the eye inspected for the first time. During the first few days the patient should

be fed on soft and easily digested food. His bowels should be kept open, a gentle laxative being administered if necessary. He should be cautioned not to lie on the side of the eye operated upon. He may sit up as much as he wants to from the first; but always should move carefully with the aid of an assistant. He should always be kept in a moderately light room.

If the recovery is smooth, no treatment is necessary but to protect the eye from injury and from a bright light, and to keep it clean. If there is considerable redness, showing a tendency to iritis, atropine, 1 % solution, should be dropped into the eye sufficiently often to keep the pupil dilated. If incarceration of the iris occurs, no interference is necessary. If prolapse of the iris takes place, the prolapsed portion should be excised at the earliest opportunity. If, in spite of antiseptic precautions, suppuration appears in the line of the wound, the latter should be thoroughly seared with the actual cautery throughout its entire length without delay. Of course, iced cloths, hot fomentations, atropine, leeches, and other antiphlogistic measures will have to be resorted to in those exceptional cases that "are bound to go to the bad" in spite of everything. Sometimes we are humiliated by being compelled to enucleate the eye in order to save the patient from a long period of suffering, and to render more safe the removal of the cataract from his other eye.

Although in the tabulated statistics I have separated the five "combined" extractions into a separate group, yet as the number is so small, I have thought it best to include the whole number operated upon (118) in the following statement of sex, age, results, etc.

There were 53 males and 65 females.

The youngest patient was 27 and the oldest 105. The latter may be taken with a grain of salt. There was circumstantial evidence, however, that she was not far from a hundred years old.

57 right eyes and 61 left eyes were operated upon. Loss of VITREOUS was the only accident noted as occurring during the operations. This happened four times, or in less than $3\frac{1}{2}$ %.

During recovery, incarceration of the iris in the wound occured 5 times, or in a little over 4%; prolapse of iris occurred 11 times, or in less than $9\frac{1}{2}$ %; iritis occurred in 8 cases, or in nearly 7%; striped keratitis was observed in 1 case in which the anterior chamber had been washed out; iritis resulted in occlusion of the pupil in 1 case; in 1 case there was a leaking anterior chamber that never was re-established, the sight being lost without much else to account for it, and in 4 cases therewas suppuration followed by irido-choroiditis.

As to secondary operations, paracentesis was done in 1 case to relieve an evidently increased tension, excision of prolapsed iris in 7 cases, cauterization of prolapsed iris in 3 cases; discission was done in 28 cases, or in less than 24 % of the eyes operated upon; iridectomy was done in 1 case, iridotomy in 1 case, and Agnews hook operation in 1 case.

In making up the final results, I have followed the method so long in vogue of calling vision $\frac{20}{200}$ and upwards a "success," vision of "counting fingers" up to $\frac{20}{200}$ a "partial success," and all vision below "counting fingers," including no vision at all, "a failure."

FINAL RESULTS.

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2 eyes had vision 20.
           66
 9
           66
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24
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19
           66
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17
            66
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    \begin{array}{r}
      20 \\
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16
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     46 66
                          o and perception of light.
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8 partial successes, or 6 %. 6 failures, or 5 %.

SIMPLE EXTRACTIONS.

Ultimate Vision,	Perception of light. Perception of light. 250 with + 10. D. O + 3. D. ax. 10°. 250 with + 10.5 D. O + 5. D. 15°. Perception of light. 250 with + 10.5 D. O + 2. D. 15°. 250 with + 10. D. O + 2. D. 15°. 250 with + 10. D. O + 2. D. 18°. 250 with + 10. D. O + 2.5 D. 18°. 250 with + 10. D. O + 2.5 D. 18°. 250 with + 10. D. O + 2.5 D. 18°. 250 with + 10. D.
Secondary Operation.	Discission. Cauterization. Discission. Discission. Discission. Excised prolapsed prolapsed prolapsed iris. Discission. Discission. Discission.
Vision before Secondary Operation.	\$\$ with 12, + D, \(\times\) + 1.50 D, 180°. \$\$ with + 11. D, \(\times\) + 5.5 D, 180°. \$\$ with + 12. D. \$\$\$ with + 10. D. \$\$\$ with + 10. D. \$\$\$ with + 11. D.
No. of days confined.	& 7.448 840888888888 888448848
Operation. Incidents, Course of Healing, Remarks.	O. D. Smooth; cortical; eserine before bandaging; eye lost by hemorrhagic iridochoroiditis. O. S. Smooth; uneventful. O. S. Smooth; eserine; pupillary membrane. O. S. Smooth; eserine; O. D. Smooth; eserine. O. D. Smooth; eserine; membrane. O. D. Loss of virreous; iritis. O. D. Loss of virreous; iritis. O. D. Cortical; membrane. O. S. Smooth. O. S. Cortical; dense membrane. O. S. Cortical; prolapse of iris. O. S. Cortical; membrane.
Age.	8 4 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8
No.	F FMFF MFFFMFFMFMMMF FFMMMFFFF

38 with + 12. D. ○ + 185°.	288 with + 11. D. 388 with + 12. D. 388 with + 10. D. \bigcirc + 1.5 D. 180.	256 with + 13. D. ; + 2.75 D. 15°. 369 with + 12. D. ; + 2.75 D. 15°. 369 with + 11. D. ; + 11.5 D. 165°. Counts fingers. Counts fingers.	250 with + 12. D. 150 with + 12. D. 150 with + 12. D. > + 3. D. 30°.	26% with + 13. D.	250 with + 10. D. O + 3. D. 45°. 250 with + 10. D. O + 8. D. 180°. 250 with + 8.5 D. O + 3.5 D. 180°. 250 with + 10. D. O + 2.75 D. 165°. 251 with + 10. D. O + 2.5 D. 165°. 252 with + 10. D. O + 2.5 D. 180°.	\$60 with + 20. D. \$50 with + 2. D. \$60 with + 12. D. \$60 with + 12. D. \$60 with + 8. D. \odot + 5. D. 90°.	% with + 10. D. ○ + 5. D. 180°.
Excision of prolapsed	ssion. ssion.	Discission. Discission.	Discission. Discission. Excision of prolapsed	rns, Hook operation, Cauteriza- tion of prolapsed	uns, Iridotomy.	Discission. Discission. Discission. Excision	ot pro- lapsed iris, Paracen- tesis,
	700 with + 9.5 D. 0 + 3.5 D. 15°.	% with $+9$. D. $\bigcirc +2.5$ D. 165° . 26° with $+$ 10. D. $\bigcirc +2.5$ D. 165° .	$\begin{array}{c} \frac{836}{500} \text{ with} + \text{io. D.} \odot + 3.5 \text{ D. 150}^{\circ}, \\ \frac{836}{500} \text{ with} + \text{io. D.} \odot + 1.5 \text{ D. 45}^{\circ}. \\ \text{selfo} \text{ with} + \text{ii. D.} \end{array}$		Perception of light,	$^{3.6}_{2.0}$ with $+$ 2. D. \bigcirc $+$ 4. D. 180°. $^{3.6}_{2.0}$ with $+$ 10. D. \bigcirc $+$ 2.5 D. 15°. $^{3.6}_{2.0}$ with $+$ 10. D.	
5	10 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	272752	4 6 7 8 8	12	141 27 18 19 19 19	2772	20 27
O. D. Prolapse of iris.	O. S. Uneventful. O. S. Uneventful. O. S. Membrane. O. S. Leaking anterior chamber; membrane. O. S. Uneventful. O. S. Prolapse of iris; membrane.	O. S. Prolapse of iris; membrane. O. D. Uneventful. O. D. Iritis; membrane. O. S. Old corneal opacity. O. S. Membrane. O. S. Membrane.	iowi	O. D. Prolapse of iris.	O. D. Iritis followed by occlusion of pupil. O. D. Uneventful. O. D. Patient would not stay longer in hospital. O. D. Cortical. O. D. Uneventful. O. S. Uneventful.	O. D. Membrane; highly myopic. O. D. Prolapsed iris; iritis; membrane.	O. S. Membrane. O. D. Old corneal opacity; iritis.
8	238888	RESERVE	-	12		1 % 4%	82.15
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92	284484	XX 2% 24:	+444	÷		25.27.23	37

Ultimate Vision.	Perception of light.	180°. 180°. 180°. 180°. 180°. 180°. 180°. 180°. 180°.
Secondary Operation.	Discission. Excision of prolapsed iris. Discission. Discission. Discission. Discission. Discission. Discission.	
No. of Days No. of	\$\frac{300}{200}\$ with \$+\$ io, D, \$\infty\$+ 2. D. 180°. \$\frac{300}{200}\$ with \$+\$ io, D, \$\infty\$+ 2.5 D. 15°. \$\frac{300}{200}\$ with \$+\$ io, D, \$\infty\$+ 2. D. 145°. \$\frac{30}{30}\$ with \$+\$ io, D, \$\infty\$+ 3.50 D. 145°. \$\frac{30}{30}\$ with \$+\$ io, D, \$\infty\$+ 5. D. 45°. \$\frac{30}{30}\$ with \$\frac{300}{30}\$ with \$\frac{300}{30}\$ of \$0.00\$	
No. of Days Confined.	32. 0.534644 43545411168485884444	288
Operation, Incidents, Course of Healing, Remarks,		O. D. Uneventful. O. S. Uneventful. O. D. Uneventful.
Age.	READ MONAGE MANAGEMENT	2 48
Sex.	HARA DOGOCA CORRESPONDE A RES	FINE.
.oV	82 82 82 82 82 82 82 82 82 82 82 82 82 8	8888

28 with + 11. D, 2+2.75 D, 180°. 28 with + 10. D, 2 + 2.75 D, 180°. 28 with + 10. D. 29 with + 10. D.	28 with + 11. D, O + 3.5 D. 15°. 25° with + 8. D, O + 6. D. 17°°. 25° with + 9. D. O + 2. D. 30°. 28 with + 5.5 D,	second with $+$ 10. D. $+$ 11. D. 165°. with $+$ 10. D. $+$ 11. D. 165°. with $+$ 12. D. $+$ 11. D. 165°. with $+$ 12. D. $+$ 11. D. 165°. with $+$ 12. D. $+$ 11.75 D. 25°. with $+$ 11. D. $+$ 12. D. $+$ 12. D. $+$ 12. D. $+$ 13. D. $+$ 14. D. $+$ 15. D. $+$ 15. D. $+$ 16. D. $+$ 17. D. $+$ 18. D. $+$ 18. D. $+$ 19.	16 with + 11. D. O + 1.5 D. 180°.
Excision of prolapsed	iris.		
5 7-87 5	13.818.2	8111 188 4 0 4 5 8 1 1	21
O. S. Uneventful. O. S. Uneventful. O. D. Incarceration of iris, gradually developing into prolapse.	O. S. Uneventful, O. D. Uneventful, O. D. Uneventful, O. S. Uneventful, O. S. Eye lost by suppuration, O. D. Prolabse of iris occurred on the 8th day; no inflammation.	O. S. Uneventful. O. S. Uneventful. O. S. Uneventful. O. S. Uneventful. O. D. Uneventful.	. S. Uneventful.
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NAME		NAME NAMENAMEN	
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"COMBINED EXTRACTIONS."

\$6 with 10, D. 4.5 D. 180°.	Discission. 38 with 12, D.	38 with 11. D.	Discission. \$8 with 13. D.	Discission. 28 with rr. D.
	Discission.		Discission.	Discission.
	200 with 10. D.		245 with 9, D,	gg with 11. D.
28	23	23	30	11
F. 105 O. S. Colored woman from Williamstown, Mass; co-caine; modified Graefe; has glaucoma absolutum of	F. 53 O.S. Ether; preliminary iridectomy; membrane; 23 200 with 10, D. other eye previously lost after a simple extraction.	M. 71 O. S. Iridectomy after extraction on account of bad 23 behavior of iris; cocaine.	F. 56 O. S. Ether; modified Graefe; colored woman; mem- 20 20 with 9. D.	M. 28 O.S. Rheumatism and eczema, asthma and bronchitis; 77 §§ with 11. D. cocaine; modified Graefe; membrane; iritis.
105	53	71	26	00
E.	E ;	M.	F.	M.
+	es	3	+	10

