

An analysis of a further series of 250 consecutive operations for primary cataract performed in the Government ophthalmic Hospital, Madras / by R.H. Elliot.

Contributors

Elliot, Robert Henry, 1864-1936.
Royal College of Surgeons of England

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PRIMARY CATARACT

PERFORMED IN THE GOVERNMENT OPHTHALMIC
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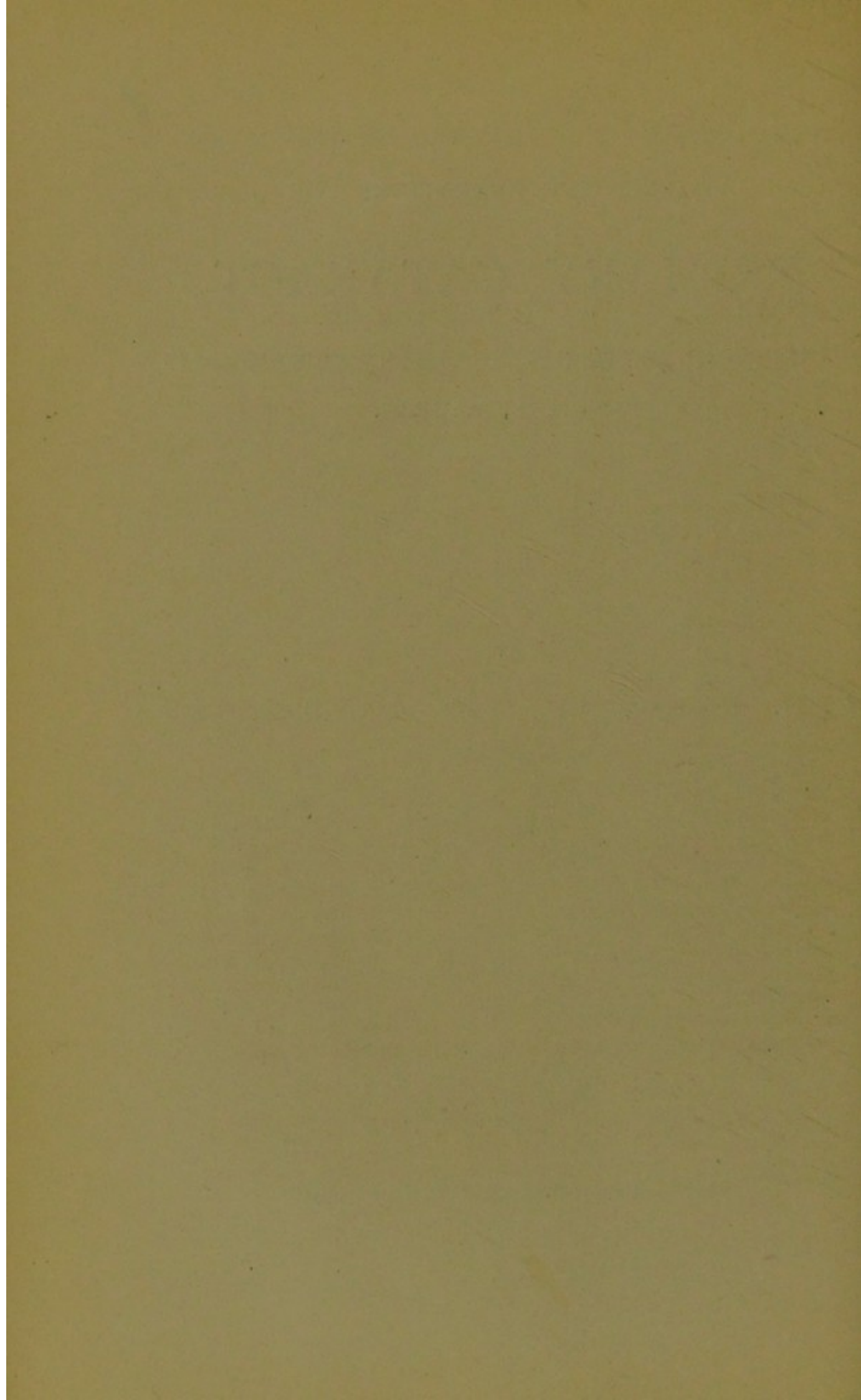
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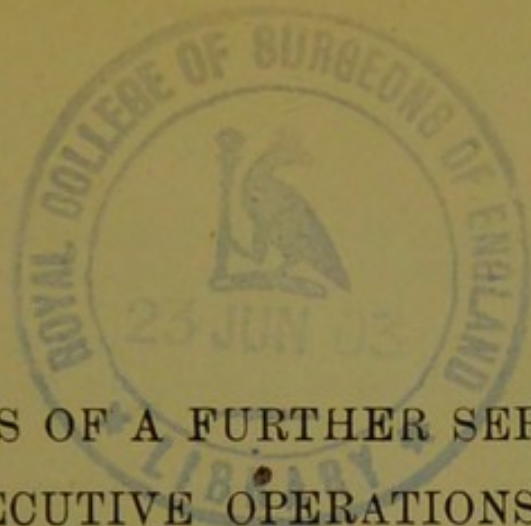
R. H. ELLIOT, M.B., B.S. LOND., F.R.C.S. ENG.,

CAPTAIN, I.M.S



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AN ANALYSIS OF A FURTHER SERIES OF
250 CONSECUTIVE OPERATIONS FOR
PRIMARY CATARACT PERFORMED
IN THE GOVERNMENT OPH-
THALMIC HOSPITAL,
MADRAS.¹

THESE 250 cases form a consecutive series of operations for the extraction of cataract performed in the Government Ophthalmic Hospital, Madras, in the period from Nov. 30th, 1901, to Feb. 1st, 1902. As in the previous series secondary cataracts and those complicated with glaucoma have been excluded. Black cataracts were subjected to a more rigid examination than before and a closer censorship was exercised over the admission of cases in which there were any signs of catarrh of the conjunctiva.

The preliminary remarks made in my previous paper are equally applicable to this one. MacKeown's method was adopted throughout and I can only say of it that the more I use it the better I like it; it has all the advantages I claimed for it in my previous paper and deserves a wider recognition than it has yet been accorded. The number of cases operated upon with iridectomy was 246, the number in which iridectomy had been previously performed was 3, and 1 was operated on without iridectomy.² The number of cases in

¹ Vide THE LANCET, Nov. 8th, 1902, p. 1252

² The case in which iridectomy was not performed was the same one as that in which irrigation was omitted; the woman was very troublesome and squeezed out the lens as soon as the section was completed; she was so unmanageable that it was thought better to shorten the operation in every way.

which irrigation of the anterior chamber was employed was 249 and in 1 case the anterior chamber was not irrigated. The number of right eyes operated on was 130 and the number of left eyes was 120. The number of cases in which a hypodermic injection of morphine was given was 53, or 21.2 per cent.

The nature of the cataract was as follows:—Cortico-nuclear, 178 cases, or 71.2 per cent. ; nuclear, 42, or 16.8 per cent. ; Morgagnian, 26, or 10.4 per cent. ; posterior polar, 2, or 0.8 per cent. ; soft, 1, or 0.4 per cent. ; and capsular, 1, or 0.4 per cent.

Complications met with before operation.—(1) Congestion of the conjunctiva and catarrh, 172 cases, or 68.8 per cent. ; (2) granular ophthalmia, 1, or 0.4 per cent. ; (3) pterygium, 36, or 14.4 per cent. ; (4) opacity of cornea, 8, or 3.2 per cent. ; (5) anterior synechia, 1, or 0.4 per cent. ; (6) posterior synechia, 2, or 0.8 per cent. ; (7) rigidity of iris, leading to slow or irregular dilatation of the pupil under a mydriatic (no adhesions apparent), 7, or 2.8 per cent. ; (8) increase of tension, 18, or 7.2 per cent. ; (9) diminution of tension, 6, or 2.4 per cent. ; (10) dislocation of lens, 1, or 0.4 per cent. ; (11) tremulous lens (due to lax zonule), 1, or 0.4 per cent. ; (12) presence of a coloboma from an iridectomy previously performed, 3, or 1.2 per cent. ; (13) lacrymal obstruction, 2, or 0.8 per cent. ; and (14) albuminuria, 1, or 0.4 per cent.

1. Of the 172 cases of conjunctival congestion and catarrh many were very slight in degree ; 100 of them were treated with silver nitrate before operation for periods varying from three to 31 days. All did well except 2 ; of these 1 had been under treatment of the lids for 31 days, yet developed suppurative iritis after operation, and the other did likewise after eight days' preliminary treatment.

2. The case of granular ophthalmia received ten days' preliminary treatment and made an uninterrupted recovery.

3. In 2 of the 36 cases of pterygium transplantation was performed as a preliminary measure ; in the remaining 34 cases the pterygium was avoided during the section, and in one of these the growth inflamed and delayed convalescence, the rest doing well.

4. The opacities in all the 8 cases were peripheral and did not seriously interfere with the results.

5. In the case of anterior synechia iritis threatened after the operation, but subsided under leeching, &c. ; the vision on discharge was M.B.E. (miniature bull's eyes) at 1.75 metres.

6. Both the cases complicated with posterior synechia did well and the vision on discharge was respectively M.B.E. at 6 metres and No. I. Jaeger and M.B.E. at 3.5 metres and No. I. Jaeger.

7. All the cases with rigidity of the pupil did well and the vision on discharge was M.B.E. at 1 to 2 metres in 3 cases and M.B.E. at 2.5 to 3 metres in 4 cases.

8. All the 18 cases with raised tension gave good results, except one in a patient who gave a good deal of trouble during extraction and who had subsequent keratitis ; on discharge the patient was only able to count fingers at half a metre. In the rest the vision on discharge was M.B.E. at 1 to 2 metres in 8 cases, M.B.E. at 2.5 to 3 metres in 6 cases, and M.B.E. at 5 metres in 3.

9. All the cases with lowered tension recovered with good vision ; the vision was M.B.E. at 1 to 2 metres in 3 cases and M.B.E. at 2 to 4 metres in 3 cases.

10. The lens in this case was partially dislocated upwards and inwards and no history of injury could be obtained ; after iridectomy the lens was delivered by manipulation, some cortex being left behind ; a subsequent capsulotomy gave a vision of M.B.E. at 1.5 metres.

11. In the case of tremulous lens a tiny macerated nucleus was manipulated out with great difficulty and the patient made a good recovery with vision = M.B.E. at 1.75 metres.

12. No history could be obtained as to the "wherefore" of iridectomy in these 3 cases ; in one the iris was tightly adherent to the lens capsule, which was thickened, and in consequence of this adhesion the capsule had to be left behind after extraction of the lens ; the patient made a good recovery with vision = M.B.E. at 3 metres and No. I. Jaeger.

In the second case the capsule came away entire and the vision was M.B.E. at 2 metres and No. VIII. Jaeger. In the third case the operation was completed without trouble, but on the fourth day another patient injured her eye; she left hospital with vision = M.B.E. at 1 metre.

13. In both cases the stricture was well dilated previously to extraction and the complication in no way interfered with the result: vision = M.B.E. at 2 metres in both cases.

14. The case of albuminuria made an uninterrupted recovery: vision = M.B.E. at 2 metres.

Complications which occurred during operation.—(1) Rotation of the lens during delivery, 2, or 0·8 per cent.; (2) conditions arose demanding delivery of lens by vectis, 3, or 1·2 per cent.; (3) lens delivered in capsule, 1, or 0·4 per cent.; (4) lens failed to present till after a further laceration of the capsules, 2, or 0·8 per cent.; (5) lens was expelled by the patient's efforts, 3, or 1·2 per cent.; (6) lens was dislocated during delivery by patient squeezing, 1, or 0·4 per cent.; (7) portions of capsule were removed after the extraction of the lens by means of forceps, 10, or 4 per cent.; (8) the section proved too small and had to be enlarged, 4, or 1·6 per cent.; (9) a presentation of vitreous occurred, 7,³ or 2·8 per cent.; (10) an incomplete iridectomy was made, 2, or 0·8 per cent.; (11) iridectomy was performed after delivery, 2, or 0·8 per cent.; (12) an involuntary iridectomy was performed by the knife whilst making the section, 4, or 1·6 per cent.; (13) the iris was partially detached by violent and unexpected movements on the part of the patient, 2, or 0·8 per cent.; and (14) the eye proved very inelastic, 5, or 2 per cent.

1. Of the 2 cases in which rotation of the lens occurred during delivery, 1 case had some subsequent keratitis, but eventually made an excellent recovery with vision = M.B.E. at 3·25 metres and No. II. Jaeger; the other recovered without incident and with vision = M.B.E. at 2·5 metres and No. VI. Jaeger. There were 2 other cases in which rotation threatened but was easily prevented by pressing the lens

³ In only 3 of the 7 cases was there an actual loss of vitreous, i.e., in 1·2 per cent. of the whole series.

back below the line of section by means of a needle introduced through the wound.

2. There were 3 cases in which vectis-delivery was resorted to; in the first case the lens threatened to rotate and vitreous presented in the wound; the vectis was at once introduced and delivery was effected without perceptible loss of vitreous; vision = M.B.E. at 3 metres and No. VI. Jaeger. In the second case vitreous again threatened to escape, but this time during ordinary manipulative delivery; the lens was delivered with difficulty by the vectis and without perceptible loss of the hyaloid; some iritis followed, but the patient recovered with useful vision which two months after discharge had improved to M.B.E. at 1.5 metres and No. VIII. Jaeger. In the third case the incision for a Morgagnian cataract was made without my assistant's help and a violent squeeze of the eyelids expressed a little vitreous; manipulation failing, the vectis was used and a good recovery ensued; vision = M.B.E. at 1.5 metres and No. X. Jaeger.

3. In 1 case the lens was delivered in its capsule; immediately after its delivery the patient squeezed the lids, causing a slight escape of vitreous; recovery was uneventful and vision was M.B.E. at 1.75 metres.

4. In 2 cases the lens would not present till after a further laceration of the capsule; in 1 case an effort was made to cut the capsule with the knife during section, as the needling had been doubtful; even then the lens presented in its capsule, straining the section, so the capsule was freely divided with the knife over the presenting edge of the lens; a pale nucleus escaped, and on attempting to irrigate the vitreous presented in the wound; the operation was at once stopped and no loss of hyaloid occurred; vision = M.B.E. at 1.5 metres and No. VIII. Jaeger. In the second case, as the lens would not present, a needle was passed through the wound and the capsule was freely lacerated; delivery was then effected; vision = M.B.E. at 2 metres and No. X. Jaeger.

5. The lens was expelled by the patient's squeezing in 3 cases in spite of every effort made to prevent such a contingency; in the first case, despite a hypodermic injection of morphine, the patient squeezed violently the moment the

section was completed ; though a very troublesome patient she made a good recovery with vision = M.B.E. at 3 metres and No. VI. Jaeger. In the second case the patient started squeezing during the section and a free iridectomy was performed by the knife ; as soon as the section was completed the lens was violently expelled ; she made a good recovery with vision = M.B.E. at 3.5 metres and No. I. Jaeger. In the third case the patient would not look down during the section and the iris was in consequence scraped ; she then squeezed violently ; the section leaked for eight days ; vision = M.B.E. at 1.75 metres and No. VI. Jaeger.

6. In 1 case the lens was partially dislocated into the vitreous owing to sudden and violent movements made by the patient during the attempt to deliver it ; a farther manipulation, however, delivered it without any escape of vitreous occurring ; there was a good deal of subsequent keratitis ; vision = M.B.E. at 1.5 metres and No. VI. Jaeger.

7. In 10 cases the capsule was removed (either in part or entire) after the delivery of the lens. In 2 cases vitreous threatened to escape, but without any loss ; in 2 the healing of the section was delayed for some days (5 and 9 days respectively) ; and 1 case had a severe attack of keratitis resulting in very poor vision (able to count figures at 2 feet only) ; in the other cases vision = M.B.E. at from 2 to 3 metres in 7 cases and at 6 metres in 2 cases.

8. The section required enlarging in 4 cases ; this was done with scissors ; 1 case made an uninterrupted recovery, two cases had subsequent keratitis, and 1 case ended in suppurative keratitis.

9. In 7 cases the vitreous either presented or actually escaped. This gives a percentage for this accident of 2.8 per cent. against the 2 per cent. under the same heading in my last published series of 500 consecutive cases. Of these 7 cases, in only 3 (1.2 per cent. of the whole) did the vitreous actually escape. As any interference with the vitreous in cataract extraction is of the most serious and far-reaching consequence, the notes of these 7 cases are given somewhat in detail ; several of them have been indirectly touched on already. In Case 1 the lens was

delivered entire after iridectomy ; after the operation was finished the patient suddenly squeezed the eye and a slight loss of vitreous was the result. Vision = M.B.E. at 1.75 metres and No. X. Jaeger. In Case 2, a Morgagnian cataract, contrary to my rule I made the section without having first entrusted the speculum to my assistant ; the patient squeezed violently and a slight escape of vitreous was the result ; manipulation failed to deliver the lens which was removed with a vectis. Vision = M.B.E. at 1.5 metres and No. X. Jaeger. In Case 3 intracapsular irrigation by MacKeown's method had been employed for a rather soft immature lens in order to separate the cortex from the capsule : after waiting for ten minutes the eye was re-opened, when it was found that a bead of vitreous was presenting ; manipulation failed to deliver and more vitreous presented ; the vectis, curette, iris forceps, and scoop were tried in turn and the lens was eventually removed in fragments after considerable loss of vitreous. Vision = M.B.E. at 1 metre and No. X. Jaeger. In Case 4 the patient would not look down and the iris was cut in the section, a full iridectomy being performed ; a bulky nucleus with sticky cortex was delivered and the anterior chamber was washed out with MacKeown's apparatus ; the eye was a flaccid one ; a piece of capsule seen in the anterior chamber was removed with iris forceps and the vitreous then threatened to escape ; the eye was at once closed and no vitreous was lost. Vision = M.B.E. at 6 metres, and No. I. Jaeger. In Case 5 again the patient looked up and a free iridectomy was performed in section ; a bulky nucleus with doughy cortex was delivered with difficulty ; a good deal of the cortex was washed out with the irrigator, and a very tough capsule was removed with iris forceps ; whilst the iris was being next washed back with the irrigator vitreous presented and the eye was at once closed, fortunately without loss of hyaloid ; the patient was very troublesome throughout the operation. Vision = M.B.E. at 3 metres and No. 1 Jaeger. In Case 6 the lens would not present easily and during expression the patient made violent movements ; the nucleus and a large cast of cortex (half the circumference) were removed by manipulation and the rest of the cortex sank back into the vitreous and could only have been removed by extensive interference with that body ; it was therefore left. There was no escape of vitreous, or very little if any. Vision = M.B.E. at 1.5 metres and No. VI. Jaeger. In Case 7 the capsule was very tough and though

the knife was used during section to tear it (the needle having failed) it remained unopened and the lens presented entire in its capsule; the capsule was freely cut with the knife introduced through the wound and a pale cortico-nuclear cataract was delivered. The posterior support of the lens had evidently been injured and vitreous at once presented on attempting irrigation. The eye was closed without loss of hyaloid. Vision = M.B.E. at 1.5 metres and No. VIII. Jaeger.

10. In 2 cases the iridectomy was incomplete—i.e., failed to include the periphery of the iris—owing to difficulties arising out of the patient's nervousness; in both cases recovery was uneventful and the result good.

11. Twice one was obliged to perform iridectomy after the delivery of the lens, as the patient had squeezed out the latter body as soon as the section had been completed. Both made good recoveries and the vision was excellent in both.

12. In 4 cases the iris was involuntarily cut in section; on each occasion the accident was due to the patient looking upwards, contrary to orders, during the section. When one sees that the iris has got foul of the knife, one always endeavours to make a free iridectomy with the latter during the section. All 4 cases made uninterrupted recoveries, with excellent vision.

13. The iris was partially detached in 2 cases owing to the patients making sudden movements during iridectomy; in one case there was free hæmorrhage and in the other there was slight keratitis during delivery. Both recovered with excellent vision.

14. In 5 cases the eyeball was very inelastic; in 1 case the chamber contained some blood the day after operation, another had some conjunctival congestion for a while, and a third had suppurative iritis. The results were vision = M.B.E. at 2 to 3.25 metres in 3 cases and at 6 metres in 1 case. The last one recovered with only perception of light.

Complications arising after operation.—(1) section remaining ununited for several days, 17, or 6.8 per cent.; (2)

section burst by patient rubbing or striking the eye, 8, or 3.2 per cent. ; (3) effusion of blood into anterior chamber, 13, or 5.2 per cent. ; (4) impaction of portions of iris in the section, 6, or 2.4 per cent. ; (5) marked congestion of the conjunctiva, 10, or 4.0 per cent. ; (6) suppurative iritis, 4, or 1.6 per cent. ; (7) suppurative keratitis, 1, or 0.4 per cent. ; (8) iritis or threatened iritis, 10, or 4.0 per cent. ; (9) keratitis mostly very slight in degree, 33, or 13.2 per cent. ; (10) flap not in correct apposition, 4, or 1.6 per cent. ; (11) spasmodic entropion, 3, or 1.2 per cent. ; (12) inflammation of a pterygium, 1, or 0.4 per cent. ; and (13) presence of a secondary membrane calling for a secondary operation, 17, or 6.8 per cent.

1. In most of the 17 cases the section remained ununited or leaky for five or six days ; the longest period was 11 days and the shortest two days. All did well and the vision was M.B.E. at 1 to 2 metres in 6 cases, at 2.25 to 3 metres in 9 cases, and at 5 to 6 metres in 2 cases.

2. In 8 cases the section was burst by the patient rubbing the eye ; in one of these blood was effused into the anterior chamber and discission of the capsule formed had to be undertaken later. The vision was M.B.E. at 1 to 2 metres in 3 cases and at 2 to 6 metres in 5.

3. In 13 cases blood was found in the anterior chamber after operation ; in most of these cases this was probably due to interference on the patient's part. All did well and only the case referred to just above required subsequent needling. The vision was M.B.E. at 1 to 2 metres in 9 cases and at 2.75 to 4.75 metres in 4 cases.

4. In 6 cases a tag of iris became impacted in the section ;⁴ in 2 of these cases it was subsequently excised after opening up the section ; in the other four it was very small and gave rise to no symptoms, so it was left alone. Every case was watched carefully throughout the series for entanglement of the iris ; it is possible that a percentage of these 6 cases may have been due to the iris edges having

⁴ My experience of prolapse of the edges of the iris after the combined operation is that one never meets with the same acute signs and symptoms in this condition as one encounters in prolapse of the iris after the simple operation.

been incompletely returned at the operation. But I do not think this was the case, and I believe they were cases of prolapse. The vision was M.B.E. at 2 metres in 4 cases and at 4·5 and 6 metres respectively in 2 cases.

5. Congestion of the conjunctiva sufficient to demand a note occurred in 10 cases; it did not seriously complicate treatment in any and all did well.

6. There were 4 cases of suppurative iritis. In Case 1, capsulo-lenticular cataract, iritis commenced gradually on the fourth day and continued to increase in spite of active treatment (atropin, leeches, fomentations, purging, anti-septic irrigations, &c.); *the general health was not good at the time of operation*. One is often obliged in India to operate at once in cases which would be better for delay, as the patient cannot afford to wait. Vision = perception of light. Case 2 had been *under treatment for the lids* (catarrh) for 31 days; the lens was bulky; severe iritis set in the day after operation and was but little influenced by treatment. Vision = perception of light. Case 3 had been *treated for eight days for conjunctival congestion before operation*; the lens was bulky; suppurative iritis set in on the day after operation and its course was barely modified by active treatment; vision was lost. In Case 4 the conjunctiva was normal, the lens was bulky, and the eye was very inelastic; *several unsuccessful attempts were made to remove a piece of capsule with iris forceps*; severe iritis set in on the third morning and again active antiphlogistic treatment was adopted. On the next day the anterior chamber was well washed out through the reopened wound with chinosol solution (1 in 6000) for six minutes. Subsequently the conjunctival sac was freely irrigated thrice daily with the same solution. The chinosol appeared to exercise a very marked effect on the course of the inflammation. Vision = perception of light only.

7. One case of suppurative keratitis occurred; the conjunctiva was normal; the lens failed to present till after enlargement of the section with scissors; the patient was very stupid. On the third morning a rim of pus was seen round the section which on the seventh day had increased to well-marked suppuration. The patient went out on the twenty-fourth day with some flattening of the cornea. V. = perception of light.

8. There were 3 cases of iritis and 7 cases in which that condition threatened ; in every case active antiphlogistic and antiseptic treatment was adopted without delay and all made good recoveries. Vision = M.B.E. at from 1.75 to 3 metres in 9 cases and at 6 metres in 1 case. In all three cases of iritis an operation was required for the treatment of secondary cataract.

9. In only one of the 33 cases of keratitis was the condition at all serious ; vision in this case equalled counting fingers at 2 feet ; all the rest were slight cases and hardly even modified the course of recovery.

10. In 4 cases the flap was in faulty apposition and in 3 cases the fault was sufficient to require rectification, the flaps being replaced under cocaine ; all made good recoveries with vision = M.B.E. at 2 metres.

11. Spasmodic entropion occurred in 3 cases and was met in each case by the removal of all dressings, the eye being left open. In one of these cases the eye was again closed after the lid appeared to have recovered its tone, as the section had not closed ; the entropion recurred within 24 hours, causing free lacrymation, &c. ; on again opening the eye and leaving it open not only did the entropion subside but the section soon healed. Vision in the 3 cases = M.B.E. at 2.5, 4, and 6 metres respectively.

12. In one case a pterygium was inflamed ; the conjunctiva had been in an unhealthy state before operation and had been treated for the same ; the patient rubbed the eye and burst the section and the prolonged bandaging thus rendered necessary irritated the pterygium. Convalescence was delayed and vision = M.B.E. at 1.5 metres.

13. In 16 cases capsulotomy was performed for secondary membranes ; of these cases 2 followed iritis, in 9 cases cortical matter had been left behind, in one blood was effused into the anterior chamber owing to an injury, and in 4 cases the capsule itself was at fault. Vision = M.B.E. at from 1 to 2.5 metres in 10 cases and at from 3 to 6 metres in 6 cases. In the case in which iridotomy was performed the pupil was blocked by a dense membrane the result of iritis ; after operation vision was M.B.E. at 2 metres.

Vision on Discharge.

Counted M.B.E. at from 1	to 2 metres	121, or 48.2 per cent.	
"	" " 2.25 " 3 "	68, " 27.2	"
"	" " 3.25 " 4 "	24, " 9.6	"
"	" " 4.25 " 5 "	10, " 4.0	"
"	" " 5.25 " 6 "	17, " 6.8	"
Recovered with useful vision... ..		240, " 96.0	"
Counted fingers at from half a metre to 1	metre; very poor results, but better than		
before operation		5, " 2.0	"
Perception of light only retained		4, " 1.6	"
No vision		1, " 0.4	"
Failures		5, " 2.0	"

Near Vision.

Counted the dots of No. I. Jaeger	36, or 14·4 per cent.	
" " No. II. " 	15, " 6·0	"
" " No. III. " 	2, " 0·8	"
" " No. VI. " 	92, " 36·8	"
" " No. VIII. " 	60, " 24·0	"
" " No. X. " 	33, " 13·2	"
" " No. XII. " 	2, " 0·8	"
Recovered with useful vision	240 " 96·0	"
Counted fingers at from half a metre to 1		
metre	5, " 2·0	"
No near vision	5, " 2·0	"

In testing the vision on discharge only spheres were used and even with these a full test could not be given owing to press of work; add to this that many of the patients were very illiterate and ignorant and that routine necessitated their being tested on discharge (about a week after operation), and it will be conceded by most that the visual results given above were probably in most cases much below the actual standard obtained. Certain it is that one's private cases, which differ from the hospital cases only in superior education and in the fact that one tests them oneself with more leisure than it is possible for the assistant surgeon to give to such large numbers as are dealt with in Indian hospital practice, give much better results. With them, of course, one corrects the astigmatism. I may repeat that a vision of M.B.E. at 6 metres corresponds with a vision

of $\frac{6}{10}$ as obtained by the types. This result has been obtained by careful comparative experiments with educated patients after extraction.

To my late assistant Mr. Collins, in subordinate medical charge of the Madras Government Ophthalmic Hospital, I owe my best thanks for the skill with which he always helped me and for the painstaking care which he devoted to the compilation of statistics from my notes.

Madras.

