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TREATMENT OF DETACHED RETINA,
WITH A
Detailed Report of Thirty-Eight Cases.

By CHARLES STEDMAN BULL, M.D.,
OF NEW YORK CITY.

[Reprinted from American Ophthalmological Society Transactions, 1894.]

presented by the author

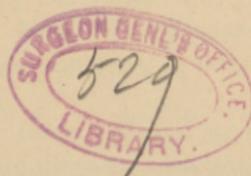


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RECENT EXPERIENCES IN THE TREATMENT OF DETACHED RETINA, WITH A DETAILED RE- PORT OF THIRTY-EIGHT CASES.

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The number of cases on which these conclusions are based was thirty-eight. Of these, twenty-three were men and fifteen were women.

Their ages ranged from nineteen to seventy-four. There was one case between 10 and 20 years; there were six cases between 20 and 30 years; six cases between 30 and 40 years; seven cases between 40 and 50 years; eleven cases between 50 and 60 years; five cases between 60 and 70 years; and two cases between 70 and 80 years.

The error of refraction was simple myopia in 22 cases; simple myopic astigmatism in one case; simple hypermetropia in six cases; simple hypermetropic astigmatism in one case; compound hypermetropic astigmatism in two cases; and in six cases the refraction was emmetropic.

The detachment of the retina occurred spontaneously in 30 cases, and was due to traumatism in 8 cases.

The detachment of the retina was preceded by more or less extensive hemorrhage into the retina in 6 cases, and by hemorrhage into the vitreous in 9 cases. A more or less extensive laceration or tear in the retina was visible in six (6) cases, which allowed a distinct view of the choroid through the rent. The intra-ocular tension was found normal in 15 cases; sub-normal in 20 cases; and increased in 3 cases.

The lens was perfectly transparent in 15 cases, but in 8 of these cases, peripheral opacities appeared later. In 15 cases there were peripheral or nuclear opacities of the lens, or both, at the time of the first examination.

The vitreous was generally hazy in 22 cases. There were floating opacities in 17 cases, and fixed membranous opacities in 14 cases.

There was more or less marked degeneration of the choroid, with interstitial atrophy, in 22 cases. There was iritis at some time during the course of the treatment in 5 cases, and acute choroiditis in one case.

The retina subsequently became totally detached in 9 cases, either during the treatment or at a varying period after the treatment had been concluded.

The lens subsequently became entirely opaque in 19 cases.

In one case an extraction of cataract was made with iridectomy before any treatment was directed towards the relief of the detachment of the retina, and with an excellent result. The wound made in the limbus healed rapidly, the coloboma remained unobstructed, the posterior capsule did not require discission, and there was no bad effect produced on the detachment of the retina.

In one case an iridectomy upwards had previously been done, without producing an effect upon the detachment.

In one case, the eye first affected by the disease, and which had subsequently become entirely blind, was enucleated by another surgeon preparatory to treatment of the disease in the other eye, but without producing any effect upon the condition of the second eye.

All the cases were subjected to the following treatment: The patients were placed on their backs in bed, atropine was instilled in one or both eyes, according to the necessities of the case, and a bandage was applied to the affected eye, and this treatment was kept up for a period varying from three to eight weeks.

Pilocarpine hydrochlorate was injected hypodermically in daily doses in 25 cases, beginning with a minute dose and increasing it to toleration. In a number of these cases the drug produced such unpleasant or alarming symptoms that it was necessary to discontinue it. My experience has taught me that it should not be prescribed in persons suffering from functional or organic cardiac disease.

In those cases in which *pilocarpine* was not borne well, or in those where it was contra-indicated, small doses of sodium bicarbonate and potassium iodide, largely diluted, were given,

the object being to induce free action of the kidneys and bowels. Corrosive sublimate in small doses was given in the cases of iritis and choroiditis, and in all cases of extensive opacities of the vitreous.

Puncture of the *eyeball* through the sclera, into the subretinal space, was done in 19 cases, in every instance subconjunctively.

Division of membranous bands in the *vitreous* and of the detached retina, thus letting the subretinal fluid out into the vitreous chamber, was done in 7 cases.

As regards the *results* of the above *treatment*, there was a temporary improvement in the vision and the detached retina, varying from a few weeks to several years before the vision became reduced, and the detachment increased in extent, in 23 cases.

There was no improvement whatever in 11 cases.

There was an apparent permanent cure, with entire disappearance of the detachment, and restoration of useful vision in 4 cases.

There was little or no reaction following puncture of the eyeball through the sclera, or after division of the detached retina and the membranous bands in the vitreous in any of the cases. This fact I have already noticed in two papers upon "The Surgical Treatment of Membranous Opacities of the Vitreous," the first one published in the Transactions of this Society for 1888, and the second published in the Ophthalmic Review for 1890.

Conclusions. The following brief conclusions seem to be justified by the results of the treatment in the above cases :

1st. The science and practice of ophthalmology have as yet discovered no better means for dealing with detachment of the retina than the old methods which have been advised and carried out for so many years, viz.: rest on the back in bed, atropine, a bandage, and the internal administrations of some drug which may induce absorption of the subretinal fluid.

2d. The continued use of pilocarpine, either hypodermically or by the mouth, may cause great prostration, even in cases in which it is apparently well-borne; and the desired effect may

sometimes be produced by small doses of bicarbonate of soda and iodide of potassium, largely diluted with water.

3d. In all recent cases, puncture of the sclera subconjunctively may do good temporarily by letting out the subretinal fluid and allowing the retina to collapse, thus producing some improvement in the vision; but the apparent improvement is generally transient, and when membranous bands exist in the vitreous, no improvement can be expected from simple puncture.

4th. Division of fixed membranous opacities in the vitreous causes but little reaction, and may do positive good, even without division of the detached retina, as it reduces the danger of extension of the detachment. It is positively contra-indicated in cases where the vitreous opacity is vascularized, as it would certainly induce free hemorrhage into the vitreous. It should never be done in an irritated or inflamed eye.

5th. Division of the detached retina, which allows the subretinal fluid to escape into the vitreous chamber, may always be done in a quiet eye, and causes little or no reaction. If membranous bands are present in the vitreous, these should also be divided at the same time.

6th. In most cases, all these operative procedures produce but temporary improvement, and in many cases no effect whatever is gained by them.

7th. There seems no good reason for any further endorsement of the method advocated by Schöler, but every reason for rejecting it from the domain of ophthalmic surgery.

CASE I. A. B., a gentleman, aged 60, was seen in the latter part of September, 1883, and was then wearing glasses of —D 8. He was a teacher, and had been obliged to use his eyes constantly, day and night. For more than a year he had noticed an increase in the size and number of the muscae, from which he had always suffered, and for some weeks he had phosphenes almost constantly in the left eye. Two days before I saw him, while correcting some manuscript, the vision in the left eye became suddenly obscured, and he had not been able to read with it since. On examination I found: R. E., $3/200$, with sph. —D 8 = $18/70$. No improvement by cylindrical glasses.

Vitreous hazy. Peripheral opacities in the lens. L. E., 3/200, with sph. —D 8 = 10/100 eccentrically. Vitreous hazy, with fixed punctate opacities and a fine floating membrane. Retina detached in the infero-nasal quadrant, and bulging somewhat tensely towards the vitreous. Peripheral opacities in the lens. In the fundus of both eyes was a large sclero-choroiditis posterior, completely encircling the disc and quite extensive choroidal degeneration all over the fundus. There was a small, irregular scotoma in the right eye, and in the left eye a defect in the field corresponding to the retinal detachment. The patient was a man of full habit who took no exercise, and suffered from habitual constipation. He was placed on his back in bed, atropine was instilled in both eyes, two leeches were applied to the left temple, and the left eye was bandaged. A mild laxative was ordered to insure one loose movement of the bowels daily. Pilocarpine hydrochlorate was injected hypodermically daily, but was discontinued on the fourth day, as it produced serious symptoms of cardiac failure. In its place he was given a mixture of sodium bicarbonate and potassium iodide, largely diluted, three times a day. The pilocarpine had caused profuse diaphoresis, while the soda and potash solution produced two or three loose movements daily, so that the laxative was discontinued. At the end of three weeks of this treatment the patient had become so weak that I was obliged to allow him to rise from bed, and discontinue all treatment except the atropine and bandage locally. He was given tonics and plenty of good food, and allowed to walk up and down the room. The vitreous had become very clear and the defect in the visual field smaller, but ophthalmoscopically the picture was the same as before, and the detached retina still bulged tensely towards the vitreous. After a week's restorative treatment, the eyeball was punctured in the infero-nasal quadrant close to the ciliary region, and the conjunctival wound being held apart, several drops of a yellowish fluid exuded, and the detachment collapsed. The eye was at once bandaged, and the patient kept very quiet. No reaction followed, and an examination the next day showed no detachment and a very much reduced defect in the visual field. After a week in bed he was allowed to rise, and the bandage

was removed. An examination showed that the detachment had shifted from a position downwards and inwards to one downwards and slightly outwards, but the vitreous was clear. The patient declined all further treatment, and was obliged to resume his occupation of teacher, but has presented himself for examination at irregular intervals ever since. For more than a year there was no apparent increase in the detachment, in spite of continued use of the eyes, but one evening after several hours' work, the vision became very much worse, and the next morning the eye was blind. When I saw him I found a total detachment of the retina in the left eye, and this has remained ever since; the lens subsequently became entirely opaque. The right eye still remains as good as it was at his first visit.

CASE II. T. G., a gentleman, aged 48, and a teacher, was first seen on December 20, 1883. Always very myopic, and had worn the same glasses for all purposes until very recently. For about a week had noticed rapidly failing vision in the right eye, and now sees with only the temporal and inferior quadrants of the retina. Examination with test types, ophthalmoscope, and perimeter showed: R. E., V. = movements of the hand. Lens clear. Vitreous very hazy. Annular sclero-choroiditis posterior. Refraction about —D 8. Detachment of the retina upwards and inwards, involving nearly half the circumference of the fundus. Tension normal. L. E., V. = 5/100; with sph. —D 8 = 18/20. Media clear. Extensive choroidal degeneration.

The patient was placed on his back in bed, atropine was instilled in both eyes, and a bandage applied to the right eye. Pilocarpine was injected hypodermically every day, and produced moderate diaphoresis. This treatment was continued for four weeks, the bandage being removed and an ophthalmoscopic examination made daily. At the end of the fourth week, the detachment of the retina had shifted from upwards and inwards to downwards and inwards, and was reduced in size. The patient was allowed to sit up in a chair, and to walk up and down the room, but there was no further improvement, and, at the end of the fifth week, the sclera was punctured subconjunctivally in the inferior nasal quadrant, and several drops of a cloudy, amber-colored fluid immediately exuded. A bandage was ap-

plied and the patient kept in bed for a week. An ophthalmoscopic examination then showed the retina to be in place throughout, though the defect in the visual field still remained. The retina remained attached for nearly five weeks, and then returned directly downwards. The patient could not submit to any further treatment, as he was obliged to continue his work of teaching, and the vision slowly grew worse, till about four months later the detachment became complete, and subsequently the lens became opaque. The left eye remained intact throughout.

CASE III. Mrs. W. J., aged 28, first seen in July, 1884. Was always very myopic, but had never worn glasses regularly. One week ago noticed a cloud before the right eye, which has slowly increased in extent. An examination showed the following condition: R. E., 3/200, unimproved. Lens clear. Floating opacities in the vitreous. Atrophic degeneration of the choroid. Annular sclero-choroiditis posterior. Retina detached in irregular folds downwards and outwards.

L. E., 6/200, with sph. —D 16 = 20/70, and reads Jaeger No. 1 at five inches. Vitreous hazy. Extensive choroidal degeneration, including the annular atrophy around the disc.

The patient was put to bed, atropine was instilled, a bandage was applied, and pilocarpine was injected hypodermically daily. The latter was borne very well and produced well-marked diaphoresis. In ten days the retina became entirely reattached, and the field was completely restored. In two weeks the bandage was removed, but the patient was kept in bed a week longer and then allowed to sit up. Vision was restored to 20/70 with the correcting glass. The eye remained well for two weeks, and then without warning the detachment recurred. The same treatment was again resorted to and with the same favorable result. But between July 7 and October 28 the detachment recurred five times, and on the last recurrence it extended so as to involve nearly the entire lower half of the fundus. The sclera was then punctured subconjunctivally in the infero-nasal quadrant, and quite a quantity of turbid yellow fluid evacuated, and the detachment at once disappeared. After two weeks in bed with a bandage constantly applied, the patient was allowed to

rise and walk about gently. The vision had very much improved, though there was still some defect in the field. The eye remained unchanged for nearly two months, and then without warning the detachment recurred while the patient was dressing, and in a few hours became total. Eight months later the lens had become entirely opaque.

CASE IV. Mrs. S. L., aged 43, first seen November 19, 1884. Has always been very myopic. During the past two years the vision has steadily failed. Has had fourteen children, the youngest born two months ago. Just before the last confinement she noticed a clear, bladder-like body floating before the left eye. On examination I found:

R. E., 2/70, with sph. —D 16 = 18/70—. Lens clear. Very extensive degeneration of the choroid all over the fundus, especially around the disc. Large cobweb in the vitreous.

L. E., 2/70, with sph. —D 16 = 18/200. Punctate opacities and general haziness of the vitreous. Lens clear. Detachment of the retina upwards and outwards, and entirely opaque. Large rent of the retina in the equatorial region, upwards and outwards, through which the choroidal vessels are clearly visible. Corresponding defect in the visual field.

The patient was at once put on her back in bed, atropine was instilled in both eyes, a bandage was applied to the left eye, and pilocarpine was injected daily. The latter was borne very well, but after three weeks of this treatment there was no change in the appearance of the fundus. After waiting for another week without any improvement, the detachment being in the same position, I punctured the sclera in the usual way subconjunctivally in the supero-temporal quadrant, and the subretinal fluid was immediately evacuated. The retina at once fell back in place, the conjunctival wound was united by a suture, and a double bandage applied. The conjunctival wound healed in twenty-four hours. The bandage was kept applied over the left eye for a week, being changed daily, and was then discarded. There was no return of the detachment in this case for about four years and a half, and she was enabled to use her eyes with careful moderation for all purposes. I saw her at intervals of a few months up to April 24, 1889. The evening before, after

using her strong glasses at the theatre for three hours, the vision of the left eye again became suddenly obscured. The next morning I found in the L. E., V. = 1/100, unimproved. Punctate and membranous opacities in the vitreous, and a detachment of the retina upwards, outwards, and downwards, involving about three-fourths of the fundus, and this soon became total.

CASE V. Miss E. S., aged 50. First seen July 3, 1885. Has been very myopic from childhood. At the age of 20, after a long illness, she suddenly lost the sight of both eyes from what was considered to be extensive hemorrhages into the retina and vitreous. Vision to a useful degree slowly returned in the left eye, but only partially in the right eye. In May, 1885, she suddenly noticed a large dark spot on the temporal side of the field of the left eye. An examination on July 3, 1885, showed the following conditions:

R. E., fingers at six feet eccentrically unimproved. Hazy vitreous. Lens clear. Extensive old chorio-retinitis disseminata, more marked in region of macula and disc. Atrophy of the optic nerve. Detachment of retina downwards and outwards.

L. E., V. = 10/100, with sph. —D 4.50 = 18/50 somewhat eccentrically. Faint opacities at periphery of lens. General chorio-retinitis disseminata. Vitreous clear. Small detachment of the retina at the extreme nasal side of the fundus.

Owing to the extreme degree of degeneration in the fundus of the left eye, I regarded the case as hopeless, but the patient was put to bed, atropine was instilled in both eyes, and a bandage applied to the left eye. She had suffered from functional cardiac trouble for many years, and pilocarpine was contra-indicated, so I gave her small doses of potassium iodide largely diluted, which acted freely on the kidneys and to some extent on the bowels. Much to my surprise, the detachment in the left eye slowly receded, and at the end of three weeks it had disappeared. The vitreous cleared up and vision rose to 18/30 with the correcting glass, at which point it has remained ever since, a period now of nearly nine years. This patient has been seen at irregular intervals ever since, and the vision and fundus have remained in about the same condition.

CASE VI. Señor F. F., aged 45. First seen July 21, 1885.

Has always had very good vision until about a year ago, when the left eye began to fail, and the sight has since steadily grown worse.

R. E., 20/20+; accepts sph. +D 1. Media and fundus normal.

L. E., 20/200 eccentrically, unimproved. Peripheral opacities in the lens. Numerous fine membranous opacities in the vitreous. Detachment of the retina downwards, inwards, and outwards, over nearly three-fourths of the fundus.

From the presence of the membranous bands in the vitreous and the gradual impairment of the vision, it was almost certain that the original lesion had been a choroiditis. As the other eye was normal, I thought it worth while to make a determined attempt to save the left eye. The patient was placed in bed, the eye was cocainized, the sclera was punctured with a narrow knife in the equatorial region in the supero-temporal quadrant, and the membranes in the vitreous were all divided. A puncture was then made in the infero-temporal quadrant, near the ciliary region, and considerable turbid fluid evacuated. Both these punctures were made subconjunctivally. The retina was partially replaced after the second puncture, and atropia was instilled and the eye bandaged. There was almost no reaction, and the vitreous showed no increase of the opacity; but after the first week there was no further improvement in the condition of the fundus. The detachment was perceptibly reduced in extent, but still occupied fully one-third of the fundus. This patient was kept in bed for four weeks and pilocarpine administered, but he bore the drug very badly, and I was obliged to discontinue it. There has been no perceptible change in this case for nearly nine years. The vitreous is still fairly clear, and vision is about 10/200, but the detachment occupies the lower half of the fundus, and the tension is decidedly below normal. The other eye is still intact.

CASE VII. Mr. D. M., aged 60. First seen September 16, 1885. Always very myopic. Wore the same glasses for all purposes for more than 30 years. About three weeks ago he suddenly became aware that he had lost the sight of the left eye. For some months previously he had noticed floating specks and cobwebs before this eye. Is a journalist and uses his eyes constantly.

R. E., 3/200; with sph.—D 9 = 18/30— Peripheral opacities in the lens. Vitreous clear. Extensive degeneration of the choroid.

L. E., fingers eccentrically at extreme left of field. Vitreous cloudy, with floating and fixed opacities. Retina detached in a large fold downwards and inwards, which partially obscures the disc.

The patient's general physical condition was bad owing to his dissipated habits, and pilocarpine was contra-indicated by reason of advanced cardiac degeneration. He was placed on his back in bed, atropine was instilled, and a bandage applied. He bore confinement very badly, and some stimulus proved constantly necessary. At the end of ten days there was no improvement, and I was obliged to allow him to rise and walk about. The condition remained unchanged for another week, and I then punctured the sclera in the infero-nasal quadrant, but no fluid appeared beneath the conjunctiva. There was no immediate result from the operation, but on removing the bandage on the fourth day, the retina was found totally detached, and so remained till his death, four years later.

CASE VIII. Mr. F. P. W., aged 28. First seen November 27, 1885. Four years ago he received an injury to the left eye, of the nature of a contusion, which produced immediate blindness, lasting nearly forty-eight hours. Vision then began to return and slowly improved for about a year, at the end of which time he thought he saw as well as ever. What the lesion was he does not know, as he was in the interior of South America, and could not reach a physician, but it was probably an intra-ocular hemorrhage. Two weeks ago while writing, the vision of the left eye became suddenly obscured and has remained so ever since. An examination showed:

R. E., 20/20—; with cyl. + D 0.50 axis 90° = 20/20+. Media and fundus normal.

L. E., fingers eccentrically in lower and outer quadrants of the field. Floating and fixed membranous opacities in the vitreous. Detachment of the retina inwards and upwards over about half of the fundus.

Recognizing the original cause of the trouble as a traumatism,

I was inclined to take rather a favorable view of this case. He was put on his back in bed, atropine was instilled, and a bandage applied for a week. Pilocarpine was injected hypodermically and borne very well, but produced very little physiological effect in spite of large doses. At the end of a week the sclera was punctured in the equatorial region in the supero-nasal quadrant, and the narrow knife was carried through the detached retina and into the vitreous, in order to divide the membranous bands in the vitreous. The detachment collapsed at once, and the eye was immediately bandaged. Absolutely no reaction followed, and though the vitreous remained cloudy, there was no return of the detachment for nearly five weeks. It then returned in the same spot and to about the same extent as before. The patient was unwilling to submit to any further operative interference. I have seen him at intervals since and the detachment has shown no tendency to extend, but the vision has steadily failed, and the lens has finally become opaque.

CASE IX. Mr. E. M., aged 50. First seen May 16, 1886. Has always had what he called weak eyes, and has never been able to do any continuous work, but his vision was always good until four weeks ago, when the left eye suddenly became very defective.

R. E., 18/30; with sph. + D 0.50 = 18/15—. Media and fundus normal.

L. E., 2/70 + eccentrically with upper portion of retina. T+I. Slight ciliary injection. Lens and vitreous clear. Detachment of entire lower half of the retina. As this was a recent detachment, I decided to operate at once. The patient was put to bed and the eye cocainized. The sclera was then punctured subconjunctivally with the narrow knife in the infero-temporal quadrant just behind the ciliary region, and a moderate amount of turbid yellow fluid evacuated. The detachment partially collapsed, and with the ophthalmoscope a long rent in the retina was seen downwards and outwards, close to the ciliary region. Atropine was then instilled and the eye bandaged. Almost no reaction followed, but the patient was kept in bed and the eye bandaged for ten days. There was still a partial detachment and some haziness of the vitreous, but the vision

had somewhat improved and now measured 20/200. Immediately after the operation the hypodermic administration of pilocarpine was begun. The patient bore it very well and it was continued for two weeks, but without producing any effect upon the detachment of the retina which still existed. The eye remained in about the same condition for two years, and then the vision grew steadily worse, fixed and floating opacities appeared in the vitreous, the tension was at times increased and at times diminished, and eventually the lens became opaque and vision sunk to perception of light. Before the cloudiness of the lens prevented ophthalmoscopic examination, there was no further extension of the detachment noticed.

CASE X. Mr. G. B., aged 40. First seen October 20, 1886. Always very myopic, but vision always good until eight months ago. At that time he received a violent blow on the right eye, which was followed by decided inflammatory action, and since then vision has been very defective. Two weeks ago he was struck by a flying chip of stone in the left eye, and lost the sight of that eye immediately. Since then vision has returned in a part of the field.

R. E., 6/200 unimproved. Small nuclear cataract, lens in place. Floating opacities in the vitreous. Extensive degeneration of the choroid.

L. E., 2/70; with sph. — D 5 = 6/70 eccentrically. Faint opacities in the lens. Membrane in the vitreous. Fluttering iris. Lens in place. Detachment of entire lower half of the retina.

The patient was placed in bed, atropine was instilled in both eyes and a bandage placed over the left eye, and no further treatment was instituted till the irritating effects of the injury had subsided, which occurred in about three weeks. The vitreous was still so cloudy that puncture was deemed unwise, and pilocarpine was then injected daily for three weeks, the atropine and bandage being continued. There was a decided improvement in the media, the vitreous becoming markedly clearer, and the choroidal process being apparently arrested. Two months later the membranous bands in the vitreous and the detached retina were divided from below by a very narrow knife, through

a subconjunctival incision. A few drops of turbid fluid exuded, but there was no collapse of the detachment, and all further treatment was given up. This eye remains in practically the same condition to-day, after a lapse of nearly eight years, vision being 2/100 unimproved by any glass.

CASE XI. Mr. H. K. L., aged 54. First seen Nov. 26, 1886. Has always been myopic, but has never worn glasses, and has overworked his eyes all his life. In April, 1881, he suddenly discovered that he was totally blind in the left eye, and on consulting an oculist, he was told that the retina was detached. In May of the same year the vision of the right eye became suddenly very defective, so that he could only see with the extreme outer angle of the field, and here also there was found a detachment of the retina. He was kept on his back in bed for two months, atropine was instilled in both eyes, and the right eye was kept bandaged most of the time. He also had injections hypodermically every other day of some drug, which was probably pilocarpine, as it induced profuse perspiration. The vision began to improve first in the left eye, but subsequently also in the right eye, and at the end of six months he was able to read again with the right eye. In 1883 opacities appeared in the lenses of both eyes, and shortly before I saw him, he was told that the sight was destroyed in the right eye by the cataract, and that nothing could be done to restore it. Examination showed:

R. E., 2/70 unimproved. Lens nearly entire opaque. Fundus invisible. T—1.

L. E., perception of light. Lens cloudy at periphery, very hazy vitreous. Detachment of the retina inwards, upwards, and outwards. T—1.

He was told that nothing could be done for the left eye, and that it was very doubtful whether anything could be done to improve the right eye, as the extent of the detachment could not be determined. The first step was the extraction of the cataract, and to this he consented. The incision was made in the limbus, and was accompanied by an iridectomy. The capsule was opened and the lens evacuated without difficulty. There was very little reaction, the wound healed readily, and two

weeks after the operation a moderate detachment of the retina was discovered downwards and outwards. As the posterior capsule stretched and gaped and the vitreous grew clearer, very extensive degeneration of the choroid was seen, but there were no fixed bands of adhesion in the vitreous. Vision slowly improved, so that eventually with sph. + D 4 he could see 15/200, but beyond this it never rose, and he has never been able to read any printed type. The eye remained in about the same condition till his death, five years later.

CASE XII. Mr. J. H., aged 36. First seen Dec. 1, 1886. Always very myopic, and vision very defective. Sometime in the spring of 1886, he woke one morning and found the vision nearly gone in the left eye, and he was told that he had detachment of the retina. In October of same year, two months before I saw him, there had been an operation performed upon the left eye, which proved unsuccessful in restoring any useful vision. Examination showed that an iridectomy had been done upwards in the left eye.

R. E., 6/200, with sph. — D 6 = 18/40. Hazy vitreous. Extensive degeneration of the choroid, especially around the posterior pole of the eye.

L. E., 6 11/100 eccentrically unimproved. Lens clear. Vitreous very hazy, with floating opacities. Retina detached downwards, outwards, and inwards. Coloboma iridis upwards. I advised the usual treatment in the supine position in bed with atropine, pilocarpine, and a bandage, but he was not willing to submit to the confinement, and went away. In 1889, while in a distant city, the retina became slightly detached in the right eye; and the left eye, which had become entirely blind, was enucleated on account of the condition of the right eye. He consulted me again on the 28th of June, 1890, and I found in the right eye V = 6/200, which by sph. — D 5 was improved to 18/200. The lens was clear, the vitreous was quite hazy, and the retina was detached downwards and outwards.

He was treated for nearly four weeks by rest in bed, atropine, a bandage to the right eye, and pilocarpine hypodermically; but the latter was discontinued on the fourth day, owing to very grave symptoms of cardiac failure. There was

a decided improvement in the vision and in the detachment, which, however, lasted but three weeks. The latter then returned and involved more of the fundus, and I advised an operation. The sclera was punctured subconjunctivally downwards and outwards, and a few drops of fluid came out, but no effect was produced upon the detachment, and the vision gradually sank to 2/200, in spite of everything that was done to prevent it, and the lens slowly became opaque.

CASE XIII. Mr. C. W. L., aged 53. First seen Feb. 2, 1887. Always myopic. Put on glasses for the first time six years ago. About a year ago he suddenly lost the vision of the right eye, and it has never returned. There is a constant dull ache in the eye, which at times becomes severe. An examination showed:

R. E., 3/200 eccentrically unimproved. Lens cloudy at the periphery. Vitreous very hazy, with floating opacities. Retina detached upwards, outwards, and downwards over about four-fifths of the fundus.

L. E., 10/200, with sph. — D 8 = 18/20.

The patient was told of the hopeless nature of his disease, but when informed that something might be tried, consented at once. He was placed in bed, the eye was cocoonized, and a subconjunctival puncture of the sclera was made about 3 millimetres long, in the infero-temporal quadrant; only a few drops of turbid fluid exuded. Atropine was then instilled, a bandage was applied, and pilocarpine was injected hypodermically every day for three weeks. At first the vitreous cleared up, and some of the floating opacities disappeared, so that a better view of the fundus was obtained, and here very extensive degeneration of the choroid was found. But before the treatment was discontinued, the opacity of the vitreous again returned and vision was reduced to the standard at which it had been before the operation. No apparent effect was produced upon the detachment, which about a year later became total.

CASE XIV. Miss W., aged 27. First seen Feb. 6, 1887. Always very myopic, but has only worn glasses (sph.— D 4.50) for two years. Three weeks before she received severe blow on the left eye, which caused temporary loss of sight, then ery-

thropsia, and subsequently extreme loss of vision. An examination showed:

R. E., 5/200, with sph. — D 9=18/15. Media clear. No very marked degeneration of the choroid.

L. E., 3/200 unimproved. Lens clear. Vitreous generally hazy. Retina detached at extreme periphery in nasal and inferior quadrants. T—1. No rupture of retina visible. Owing to the unusually healthy condition of the choroid, in spite of the high degree of myopia, I decided to operate at once. A subconjunctival puncture of the sclera was made in the infero-nasal quadrant, a few drops of clear fluid exuded, and the detached retina collapsed. Rest in bed, atropine and a bandage were then kept up persistently for five weeks. Pilocarpine was very badly borne by the patient and could not be employed. At the end of five weeks the vitreous became perfectly clear, the retina was in place, and the vision with sph. — D 7 had risen to 18/50. By total abstention from use of her eyes and careful management of her general health, which had suffered from confinement in bed, this favorable condition was maintained for nearly eight months. The detachment then suddenly returned without any warning, and involved the entire lower half of the retina. The vitreous became rapidly cloudy, and vision eventually sank to perception of light, and the lens became entirely opaque.

CASE XV. Miss E., aged 74. First seen Nov. 16, 1887. Always very myopic. Has used her eyes constantly all her life. Three days ago she struck her nose and orbital margin on the left side a violent blow against a chair, and in a few minutes noticed that she could see nothing but light with the left eye. Examination showed:

R. E., 5/200; with sph. — D 6 = cyl. — D 1 axis 90° = 18/30+. Lens and vitreous clear. Extensive degeneration of the choroid, especially around the disc.

L. E., perception of light. Vitreous filled with blood in process of absorption, with floating clots. Peripheral opacities in the lens. Three weeks later the retina was found detached in the supero-temporal quadrant. As the blood becomes absorbed and the vitreous slowly cleared up, the choroid was

found extensively degenerated, and a laceration of the retina was discovered upwards and inwards, near the region of the ora serrata. T—1.

Owing to the advanced age of the patient and the extreme degree of choroidal degeneration, very little hope was felt of a favorable issue. The patient was placed in bed, atropia was instilled, a bandage was applied, and small doses of pilocarpine were injected. The latter soon produced unpleasant symptoms of cardiac failure, and was discontinued. The patient was kept in bed five weeks, free action of the kidneys being induced by small doses of iodide and acetate of potash, largely diluted. The vitreous slowly cleared up, and the detachment gradually sank downwards until it involved the lower third of the retina. The vision improved to 5/200, with sph.—D 4, and remained at this point until the death of the patient, seven months later, and there was no further extension of the detachment.

CASE XVI. Mrs. C. R., aged 64. First seen June 16, 1888. Always hypermetropic, and has worn glasses for all purposes for many years. About ten years ago she suddenly noticed a cloud before the left eye while reading, and this slowly increased in extent, so that for about three years she had not been able to see with the eye. She was at the time told that she had a detachment of the retina. Then the vision slowly improved, and for several years she has had very useful vision with the left eye. Two weeks ago the same condition suddenly returned, and she can now only distinguish movements of the hand.

R. E., 10/200, with sph. + D 3.50=18/15. Media clear. Fundus normal.

L. E., movements of the hand. Nuclear and peripheral opacities in the lens. Vitreous hazy. Retina detached below and on both sides of the disc. T+1.

The usual treatment of rest on her back in bed, atropine and a bandage were resorted to, together with daily injections of pilocarpine, and this was persisted in for three weeks without any improvement. The vitreous became more hazy and there was no increase in the vision. It was then decided to puncture the sclera, which was done with a narrow knife sub-

conjunctivally downwards and outwards. Some turbid fluid escaped, and the detachment partially collapsed. The local treatment was continued for two weeks longer, but the retinal sac again filled up, the haziness of the vitreous increased, and the lens grew more opaque. The vision slowly sank to faint perception of light, with no correct projection, and the cataract became complete. The other eye remained intact, and there was not a sign of degeneration of the choroid ever observed.

CASE XVII. Mrs. C. S. E., aged 37. First seen July 28, 1888. Always very myopic, especially in the left eye, and for three years this eye has not been of much use. Constant dull ache in both eyes.

R. E., $3/200$; with sph. — D 10 = $18/100$. Lens clear. Hazy vitreous with floating opacities. Extensive choroidal degeneration.

L. E., movements of the hand. Extensive opacities of the vitreous. Detachment of the retina downwards and outwards. T—1.

The usual treatment was at once instituted. Rest in bed, atropine, a bandage, and pilocarpine by daily hypodermic injections were maintained for four weeks, with some improvement. The vitreous became much clearer. All the floating opacities were absorbed, but there remained a broad, dense membrane, stretching entirely across the fundus. The vision rose to $5/200$ with sph. — D 8, but there was no change in the detachment, and at the end of a month the patient was allowed to rise from the bed and move about. The state of the fundus and the vision remained unchanged for about two years, and then the sight rather rapidly failed, and within a month the retina became totally detached. The lens remained clear for two years longer and then became slowly opaque. The other eye is still as it was at the time of the first examination. This patient declined all operative treatment.

CASE XVIII. Mrs. M., aged 57. First seen Oct. 8, 1888. Always very myopic, and for many years the left eye has been useless. Some years ago had a sudden loss of vision in the right eye from hemorrhage into the vitreous and retina, from which she entirely recovered. About a month ago the vision

in the right eye again began to fail, and there is a constant dull ache in this eye.

R. E., 2/200; with sph.—D 18=10/200. Lens clear. Fixed and floating membranes in the vitreous. Small detachment of the retina downwards and outwards. T—1.

L. E., fingers at six inches, and with sph.—D 18=2/200. Lens clear. Very cloudy vitreous. Detachment of the retina outwards, downwards, and inwards. T—1.

Owing to the extreme myopia and extensive choroidal degeneration, no operation was deemed permissible. The patient was placed in bed, atropine was instilled, and a bandage was applied, and she was cupped on the right temple with Heurteloup's apparatus. The vitreous slowly cleared up but the detachment of the retina gradually extended until it involved the entire lower half of the retina. At the end of four weeks the patient became very much prostrated from the confinement in bed and the effects of the pilocarpine, and she was allowed to rise, and a course of tonic and restorative treatment was begun. She soon improved very much in general health, but the eye remained in about the same condition, and there was no change in the media or fundus for three years, since which time I have not seen the patient.

CASE XIX. Mr. C. E., aged 27. First seen April 23, 1889. In August, 1888, first noticed that the vision of the right eye was misty, previous to which both eyes had always been perfect; and this grew slowly worse until December, when it again began to improve, and eventually became entirely clear. Has used his eyes very constantly in microscopy. Two days ago the same thing occurred.

R. E., 10/100, unimproved. Lens clear. Vitreous hazy. Retina detached in radiating folds in infero-temporal quadrant, reaching from disc to periphery.

L. E., 18/15—Myopic astigmatism—D 0.50 axis 90°.

This patient was at once put to bed, and the usual local and internal treatment begun and persisted in for five weeks with very satisfactory results. There was no myopia and but very little choroidal degeneration. By the end of the third week the vitreous had become entirely clear, and the radiating folds of

detachment had coalesced into one narrow, pouch-like cyst directly downwards in the equatorial region. At the end of the fifth week the retina was entirely in place and vision had risen to 20/50. He was then permitted to rise and move about, atropine and dark glasses being constantly used. At the end of the second month he was permitted to use his eyes moderately. For two years the eye remained sound and useful, with vision of 20/30 —, since which time I have not seen him.

CASE XX. Mr. T. B., aged 28. First seen Sept. 23, 1889. This is one of the cases reported to the Society in 1891, as treated by Schoeler's method, and reported in the Transactions for that year. No improvement in the vision, but reduction in the extent of the detachment.

CASE XXI. Mrs. M., aged 47. First seen Oct. 6, 1889. Failing vision in right eye for two months. Three weeks ago the vision of this eye became suddenly very much obscured.

R. E., 8/200, eccentrically unimproved. Lens clear. Vitreous generally hazy, with floating opacities. Detachment of entire upper half of the retina. T+1.

L. E., 18/30+; with sph.+D 1=18/15—. Media clear and fundus normal. No degeneration of the choroid.

Treatment by rest in bed, atropine and cocaine, and a bandage locally, and daily injections of pilocarpine, with plenty of nourishing diet, carried out through a period of four weeks, produced a very marked improvement in this case. The general haziness of the vitreous entirely disappeared, the floating opacities were partially absorbed, the detachment grew smaller and sunk down until it occupied the infero-temporal quadrant, and vision rose to 20/200. The patient was then permitted to get up and move about the house, and at the end of another week to go out driving. The pilocarpine was discontinued and the bandages left off, but the atropine and tonic treatment were continued. The detachment grew smaller, and the vision eventually rose to 20/70, but never exceeded this, and the detachment never entirely disappeared. The condition remained unchanged for more than a year, since which I have not seen the patient.

CASE XXII. Mr. W. P., aged 58. First seen February 4,

1890. Had always had extremely good eyes till three days before, when he noticed a sudden clouding of the vision of the left eye while writing, and found that he could see nothing above the horizontal plane.

R. E., 18/13—. Media clear. Fundus normal.

L. E., 18/40— below the horizontal plane, unimproved. Media clear. Detachment of the retina in inferior quadrant, involving nearly two quadrants at the periphery.

There was no apparent cause for the occurrence of the lesion except long continued overwork, especially at night, as the refraction was emmetropic, the patient had proper presbyopic glasses, and there was no choroidal degeneration, nor any history of traumatism. Rest in bed with atropine and a bandage locally, persisted in for six weeks, eventually brought about a disappearance of the detachment and a restoration of the vision to the normal standard. How long this satisfactory condition lasted I am unable to say, as four months later the patient went to Europe, and I have never heard of him since. No pilocarpine or any other diuretic or diaphoretic was employed in the treatment of this case.

CASE XXIII. Mr. C. H. B., aged 59. First seen March 30, 1890. Has always had excellent vision in both eyes till March 14th, when he noticed a number of large black spots before the right eye. On March 26th the right eye became suddenly entirely blind. Since then the vision on the temporal side of the field has been partially restored, but he can see nothing to the left of the median line. The day before the black spots appeared he had been exposed for several hours to a furious storm of snow and wind, through which he had been obliged to walk for several miles, and he was completely prostrated by it.

R. E., 3/70 eccentrically. Lens clear. Vitreous hazy. Detachment of retina downwards, outwards, and inwards over about two-thirds of the fundus.

L. E., 18/70+. Unimproved. Lens clear. Vitreous generally hazy, with small floating opacities. General choroidal degeneration.

The patient was put to bed, atropine was instilled in both

eyes, and a bandage applied to the right eye. Owing to the existing choroiditis he was given hydrarg. chlorid. corrosiv. gr. 1/50 three times a day, and pilocarpine was injected hypodermically once a day. The latter was discontinued on the sixth day, as it induced nausea and vomiting, but the other treatment was kept up persistently for five weeks. The choroiditis gradually subsided, the vitreous of both eyes cleared up, and the floating opacities disappeared. The detachment of the retina in the right eye became much reduced in extent and the vision of this eye improved to 18/100, and that of the left eye to 18/40+. At the end of the fifth week the bandage was removed from the right eye, but he was kept in bed for another week. As time went on the sight of the left eye steadily improved and eventually reached nearly the normal standard, but the right eye remained in the same condition, as long as the patient remained under observation, a period of seven months.

CASE XXIV. Miss M. M., aged 31. First seen April 24, 1890. This is one of the cases reported to the Society in 1891, as treated by Schöler's method, and published in its Transactions for that year. The condition of the patient was made decidedly worse by the operation.

CASE XXV. Mr. W. A., aged 60. First seen May 11, 1890. This is one of the cases reported to the Society in 1891, as treated by Schöler's method, and published in its Transactions for that year. The condition of the patient was made decidedly worse by the operation.

CASE XXVI. Mr. J. M. W., aged 63. First seen June 19, 1890. Always very myopic. Is a civil engineer. Four years ago lost the sight of his right eye from detachment of the retina, and it has been useless ever since. Five days ago, while completing some surveying work in the field, he noticed a sudden obscuration of the sight of the left eye. He stopped his work at once, and as soon as possible came to see me.

R. E., perception of light. Complete posterior synechiæ. Lens opaque. T+I.

L. E., 3/200 : with sph. -D7 = 18/70-. Lens clear. Floating opacities and general haziness of the vitreous. Detachment

of the retina in the supero-temporal quadrant. The age of the patient and the condition of the right eye made the case a desperate one. He was at once put to bed, atropine instilled in both eyes, and a bandage applied to the left eye. Pilocarpine was contra-indicated on account of advanced cardiac disease, and in its place small doses of potassium iodide largely diluted, and mercuric bichloride, were administered, accompanied by a general tonic treatment. Under this treatment the vitreous gradually cleared up, and opacities were largely absorbed, but there was no improvement in the detachment of the retina, and the resulting vision after seven weeks of treatment was not improved. The ophthalmoscope showed extensive disease of the choroid with a myopia of D8. The vision of the left eye and the condition of the fundus have not materially changed since, during a period of four years.

CASE XXVII. Mr. T. E. B., aged 28. First seen September 23, 1890. Three years ago while ill, he read for a long time lying on his back in bed, for many days in succession, and since then he has suffered constantly from various asthenopic symptoms. In March, 1890, he received a blow on the right eye from a boxing glove, which temporarily produced nearly complete blindness. In April he was examined by an oculist, who discovered a detachment of the retina in the right eye. Since then there has been a slight improvement in the vision.

R. E., 15/200 eccentrically. Lens clear. Vitreous hazy, with a fixed membranous capacity. Retina detached downwards and outwards.

L. E., 18/15+, refraction normal.

As the cause of the detachment was a traumatism with resulting choroiditis, in an eye previously entirely normal, I decided to operate. Under cocaine a subconjunctival incision was made through the sclera in the infero-temporal quadrant, just back of the ciliary region, with a very narrow knife. The knife was plunged through the detached retina into the vitreous, and a complete division of the membrane in the vitreous was made. After the incision was completed, the conjunctival wound was closed by a single suture, atropine was instilled, and a bandage applied. On the next day the vitreous was very hazy, but the

detachment had entirely disappeared. On the second day all reaction had vanished, and pilocarpine was injected hyperdermically every day for fifteen days. The latter was then discontinued, and small doses of corrosive sublimate were administered thrice daily. At the end of the sixth week the vitreous had become almost entirely clear, and at the extreme periphery downwards there was still a small detachment, less than half the size of that which existed previous to the operation. There was rather extensive degeneration of the choroid, but the vision had risen to 18/70+. This eye still remains in the same condition, after a lapse of three and a half years.

CASE XXVIII. Mr. M. H., aged 73. First seen September 30, 1890. This is one of the cases reported to the Society in 1891, as treated by Schöler's method, and published in its Transactions for that year. Decided temporary improvement, followed two months later by almost total loss of sight from a return and further extension of the detachment.

CASE XXIX. Mr. B. W., aged 36. First seen December 28, 1890. This is one of the cases reported to the Society in 1891, as treated by Schöler's method, and published in its Transactions for that year. Immediate impairment of the existing vision resulted, followed by a very slow improvement, which, however, never reached the degree which existed previous to the operation.

CASE XXX. Miss A. E. M., aged 53. First seen February 7, 1891. Has always been very myopic, but her eyes have never given her any trouble. In May, 1890, she first noticed an irregular scotoma in the field of the left eye, and since then the vision has slowly failed.

R. E., 2/200: with sph. — D 10 \ominus cyl. — D 1.50, axis 180° = 18/40. Lens clear. Floating opacities in the vitreous. Extensive degeneration of the choroid all over the fundus.

L. E., Movements of the hand. Lens clear. Membranous opacities in the vitreous. Very extensive detachment of the retina downwards, outwards, and inwards.

Owing to the very extensive choroidal degeneration in both eyes, and the very large detachment of the retina in the left eye, any operation was deemed inadvisable. The patient was

put to bed, atropine was instilled in both eyes, a bandage was applied to the left eye, and a strong tonic treatment was administered for a week. Then pilocarpine was administered hypodermically every day for sixteen days. Its physiological effect was very marked, and eventually caused extreme prostration in spite of the tonic treatment, and its administration was stopped. At the end of five weeks there was no improvement in the vision and none in the detachment of the retina, though the vitreous had become very much clearer in both eyes. Six months later opacities appeared in the lens which increased so rapidly that within three months the lens had become entirely opaque. The other eye still remains in the same condition.

CASE XXXI. Mr. W. O., aged 35. First seen March 23, 1891. When a boy he had a great deal of trouble with his eyes, and was for a long time forced to give up his education, because his vision was so defective. He was for a long time under constitutional treatment of some sort, and regained sufficient vision to prosecute his studies. Several months ago he began to be troubled with foggy vision in the left eye, and there was a constant dull ache in the eye whenever reading or writing. He consulted an oculist, who told him that there was a detachment of the retina in the left eye, and that there was a chorio-retinitis in both eyes. When I examined him, I found:

R. E., 18/100: with sph. + D1.50 \ominus cyl. + D1.75 axis 165° = 18/50. Media clear. Extensive old chorio-retinitis.

L. E., 18/200 unimproved. Refraction hypermetropic and astigmatic. Lens clear. Membranous opacity in the vitreous. Detachment of the retina downwards and outwards. Extensive old chorio-retinitis.

The condition of the fundus of both eyes rendered an unfavorable prognosis almost a certainty. He was put to bed, and the usual treatment of atropine, a bandage, and pilocarpine hypodermically begun. The latter drug produced extreme nausea and prostration, and after the third dose was discontinued. Small doses of potassium iodide, largely diluted, were administered in its place, which produced very free diuresis and diarrhoea, and I was obliged to stop its use. The patient was kept on his back in bed for six weeks. At the end of that time the

vitreous was much clearer, and the vision had improved to 18/70, with a sphero-cylinder, but there was no demonstrable change in the detachment of the retina. Since the autumn of 1891 there has been a slow, but steady failure of vision in this eye, but the detachment has remained of about the same extent. Puncture of the sclera and detached retina, and division of the membranous opacity in the vitreous, caused almost no reaction, and produced not the slightest favorable effect upon the vision or the detachment.

CASE XXXII. Mr. J. C. O., aged 50. First seen July 14, 1891. One year ago, after severe mental strain, he woke one morning with a large black spot before the left eye. He consulted an oculist, who told him he had had a serious retinal hemorrhage. The blood was gradually absorbed and vision slowly improved. Subsequently he had another larger hemorrhage in the same eye, which obscured nearly the entire vision, and since then he has only been able to see with the temporal half of the field of vision. He is astigmatic and has worn correcting glasses.

R. E., 18/30—: sph.—D 0.50<cyl.—D 1, axis 180°=18/15—.
Media clear and fundus normal.

L. E., fingers eccentrically on the temporal side. Lens clear. Large membrane, containing blood-vessels, in the vitreous, attached to the temporal margin of the disc behind and to the ora serrata in front. Extensive disorganization of the retina and choroid, with a small detachment downwards and outwards.

The extensive disorganization of the retina and choroid in the left eye, and especially the presence of blood-vessels in the membrane stretching across the vitreous, positively contra-indicated any attempt to divide this membrane, as it would have caused extensive hemorrhage into the vitreous. The generally enfeebled condition of the patient forbade the employment of pilocarpine.

He was put to bed, atropine was instilled, and a bandage applied to the left eye. Strong tonic treatment was administered, and after the first two weeks, small doses of mercuric bichloride were prescribed. The eye gradually became quiet, the vitreous became somewhat less hazy, and at the end of four weeks the

patient was permitted to leave his bed, and the bandage was removed from the left eye. The vitreous membrane remained unchanged, but the detachment showed no tendency to increase for nearly two months. Vision had improved to 5/200, and all treatment was stopped. Fourteen weeks after I first saw him the eye became suddenly blind, and an examination showed that the retina had become totally detached.

CASE XXXIII.—Mrs. M. McB., aged 47. First seen Nov. 16, 1891. In June last she received a violent blow on the head by falling from a landau in a runaway accident, and was unconscious for two days, and ever since there has been a marked loss of vision in the left eye. She has always been very myopic, but has never worn glasses with any regularity.

R. E., 10/200: with sph.—D 8 \ominus cyl.—D 1 axis 90° = 18/40+. Media clear. Extensive degeneration of the choroid.

L. E., 3/200 unimproved. Lens clear. Vitreous very hazy. Detachment of the retina downwards. The patient stated that the vision of the left eye varied from time to time, and that it was always better in the morning after a night's rest. She was at once put to bed, atropine instilled, and a bandage placed over the left eye. Pilocarpine was administered hypodermically once a day for two weeks, without producing the slightest effect either upon the vitreous or the detachment. It was then discontinued, and the sclera was punctured with a narrow knife in the infero-temporal quadrant. A few drops of turbid fluid exuded under the conjunctiva, and the detachment partially collapsed. The atropine, bandage, and corrosive sublimate were continued, and in the course of three weeks more the vitreous became nearly entirely transparent. The vision rose to 18/200 with sph.—D5, and remained at this point for a period of several months, but there was no further improvement, and the detachment remained as it was after the puncture of the sclera.

CASE XXXIV.—Mr. J. H. K., aged 19. First seen, January 2, 1892. In November, 1890, during a game of football, the right eye was injured by a blow. The vision was entirely lost for a few hours, but he persisted in finishing the game. After a few hours of rest the sight began slowly to improve until about Christmas, 1890, he could see quite well. He

remained quiet and useful till April, 1891, when the vision again suddenly failed, and has never returned. Since then there have been occasional attacks of pain and congestion in the eye.

R. E., fingers at 3 feet. Iris dilated and immovable. Lens clear. Fixed and floating opacities in the vitreous. Retina detached downwards, outwards, and inwards. T—1.

L. E., 18/15, Emmetropia.

Treatment by confinement in bed, atropine, a bandage, and pilocarpine daily hypodermically for four weeks produced no improvement in the vision, and no subsidence in the detachment, though the vitreous became very much clearer. The general haziness disappeared, and most of the floating opacities were absorbed. I then punctured the sclera beneath the conjunctiva in the infero-temporal quadrant with a narrow knife, but without the slightest result. No fluid exuded beneath the conjunctiva, and there was no collapse of the detached retina. The knife was again introduced and the separated retina freely divided. This produced some collapse of the detachment, but no improvement in the vision. There was little or no reaction following these punctures, but after two weeks further confinement in bed with a bandage, there was no perceptible change, and all treatment was abandoned. This patient was seen at intervals ever since. The retina became totally detached and the lens entirely opaque. The eye at times was irritable with well-marked ciliary injection, and in the latter part of May, 1894, there appeared an obstinate conjunctivitis of the left eye with rather intense photophobia, accompanied by constant pain in the right eye, which rendered enucleation of the blind eye advisable.

CASE XXXV.—Miss L. A., aged 32. First seen January 16, 1893. Always very myopic. Five years before, following a long-continued strain of the eyes in literary work, a detachment of the retina occurred in the right eye. This was treated by another surgeon by confinement in bed, atropine, and a bandage, and by hypodermic injections of pilocarpine, for nearly five weeks, and resulted in an apparent cure, as the vision returned and the defect in the visual field was restored.

All use of the eyes was interdicted for a year, and she spent two years in travel abroad. The right eye remained fairly well until a few weeks before I saw her, when the vision suddenly grew worse, and the loss of sight was accompanied by a dull ache.

R. E., fingers at one foot eccentrically. Lens slightly cloudy at the periphery. Thin membranous opacity in the vitreous. Ciliary injection. Iritis with adhesions. Retina detached downwards, outwards, and inwards. T + I.

L. E., 4/100: with sph.—D 8 \subset cyl.—D I. .50 axis 180° = 18/304. Floating opacities in the vitreous. The patient was put to bed, atropine was instilled four times a day, the eye was bathed with hot water four times a day, and in the intervals a bandage was applied. She was also given mercuric bichloride 1/50 three times daily. The iritis proved very obstinate, and it was not until the end of the second week that the iritic adhesions began to yield. They were eventually all broken, except one broad synechia downwards and inwards. The vitreous then began to clear up and the vision to improve. The atropine, bandage, and bichloride were continued for nearly a month longer, by which time the vision had risen to 6/200, beyond which it did not go. Owing to the extreme degree of choroidal degeneration and the extent of the detachment, any operative interference was deemed ill advised. The eye remains in about the same condition at the present writing.

CASE XXXVI. Miss T. O., aged 45. First seen May 16, 1892. Four days previously, on awakening in the morning, she found that the right eye was totally blind. She had for many years strained her eyes by long hours of night work. An examination showed the following unfavorable conditions:

R. E., fingers eccentrically at six inches. Lens clear. Several small floating clots in the vitreous. Very extensive retinal hemorrhages. One very large one below the disc, stretching all across the fundus. Several small ones on the disc and along the vessels. On May 20th several small fresh hemorrhages were found, with patches of yellowish exudation below the disc. Small detachment of the retina at the extreme periphery of the fundus downwards. Signs of periarteritis and

periphlebitis. Urine of a high specific gravity, but contains neither albumen, sugar, nor casts. Large amount of urates and uric acid crystals.

On May 27th there were several small fresh hemorrhages noticed, and the large hemorrhage showed signs of absorption by breaking up into small patches.

L. E., normal in every respect, but presbyopic.

This patient was treated from the beginning in the usual way. She was placed in bed, atropine and cocaine were instilled, and a bandage was applied. She was given small doses of potassium iodide and sodium bicarbonate largely diluted, tonics, and a liberal diet. The repeated hemorrhages occurred while under this treatment, and for a period of five weeks there was no improvement in the vision and no change in the fundus. She was then permitted to rise and move about. On July 14th she had a violent epistaxis, which was so continuous and profuse that it necessitated plugging of the nostrils. The next day she claimed that she could see much better, and I found that she could count fingers at three feet all over the field. There was, however, no change in the fundus, and the vision soon sank to the former standard. In October, she had a similar attack of epistaxis, with another improvement of the vision, which lasted for several days and then disappeared. On January 27, 1894, the retina became totally detached, and one week later occurred a cerebral hemorrhage from which she did not recover.

CASE XXXVII. Mrs. W. H. M., aged 59, first seen January 20, 1894. Always myopic, but her eyes have been very strong. Just before Christmas she had a bad attack of "la grippe," with marked blurring of the sight of the left eye. This soon passed off, but one week ago the vision of the left eye again became entirely obscured, and has improved but little since.

R. E., 10/200; with sph.—D 4 \ominus cyl.—D 1 ax. $180^\circ = 18/15$. Media clear. Usual signs of a myopic fundus.

L. E., 3/200, unimproved. Large central hemorrhage in the vitreous. Peripheral opacities in the lens.

The patient was put to bed, atropia was instilled, and a bandage was applied constantly. There was a steady but slow improvement up to March 5th, when the vision in the left eye had

risen to 18/40 with sph.—D 4, and she could read Jaeger 2 at 8 inches. On March 10th, while sitting quietly in a chair, the vision of the left eye again became suddenly obscured, and an examination a few hours later showed a detachment of the retina upwards and outwards, over about one-third of the fundus. V=18/50—. The patient was immediately put to bed, the bandage reapplied, the bowels freely opened, and pilocarpine administered hypodermically, which produced the usual physiological effects to an alarming degree. The nausea was so intense that I feared to repeat the dose. After three days had passed, I ventured to give the pilocarpine in tablets by the mouth, and in this way the drug was borne very well and produced profuse diaphoresis. This treatment was kept up for four weeks and was then stopped. The atropine was continued but the bandage was discarded. The vitreous became entirely clear, and the detachment had shifted its position to downwards and outwards. The vision slowly improved and the detachment grew gradually smaller until on May 18th it had entirely disappeared. Vision was then 18/40— with a sph.—D 4, and she could read Jaeger 4 fluently.

CASE XXXVIII. Mr. E. V. H., aged 53. First seen February 6, 1894. Fourteen years ago he suddenly lost the vision of the right eye from extensive intra-ocular hemorrhage, from which the recovery was very slow. Several times since then there has been a recurrence of the hemorrhages, but always slight in degree. On three occasions there have been mild attacks of iritis in this eye, which subsided under appropriate treatment. The vision has been quite defective in this eye until ten days before I saw him, when it suddenly became very much worse, and he supposed another hemorrhage had occurred. An examination showed:

R. E., fingers at one foot eccentrically. Discolored iris, with an oval pupil, long diameter vertical. Posterior synechiæ. Lens slightly cloudy at periphery. Vitreous slightly hazy. Detachment of the retina downwards and outwards.

L. E., 18/40—, unimproved. Media clear. Fundus normal. Six weeks constant treatment by atropine, bandage, and minute doses of potassium iodide and mercuric bichloride caused

a cure of the iritis, absorption of the posterior synechiæ, a clearing up of the cloudy vitreous, and some slight improvement in the vision, but the detachment of the retina remained unchanged. The repeated hemorrhages which had occurred had probably caused such disorganization of the retina and choroid, that no useful improvement of the vision could ever be expected. This patient was seen as recently as May 16th, and the condition of the fundus and vision remained unchanged.

