of round-celled masses surrounding blood vessels. We know that a very general feature of all sarcomata is that their cell proliferation is very active in the immediate vicinity of the blood vessels in them, and some pathologists go the length of asserting that all forms of sarcomata originate in the blood vessels. This is probably too sweeping an assertion, and is not supported by facts; but there is undoubtedly a variety of sarcoma characterised by masses of round cells, which are grouped round blood vessels and spring from their adventitia or outer coat. The present tumour in every way corresponds to this description, and the origin of the cells is manifestly from the adventitia, for the sections show that the endothelium of the vessels is in the present case quite unaffected (Fig. 4, high power). This fact distinguishes it clearly from the group of endotheliomatous sarcomata, which have their starting point in the cells of the endothelium. Seeing that in the angio-sarcomata the cells are arranged in the form of groups around the blood vessels, which thus occupy the centre of the cell masses, it is easy to see that the section of such a tumour would present an alveolar structure, and to some extent that appearance is present in this case (see Fig. 3). The angio-sarcomata are occasionally pigmented, and are often the seat of degenerations, such as the hyaline, and, when this latter attacks the coats of the vessels in such tumours, we get the cylindroma of Billroth, the feature of which is the occurrence of a number of clear spaces in the sections. No such changes were anywhere observed in the present case, nor were any blood cysts or hæmorrhages present in the tumour, notwithstanding all its vascularity. This fact may be due to the very complete development of the vessels, all of which present well-defined walls, and are quite unlike the thin-walled spaces that serve as blood vessels in the majority of sarcomata.

Whatever structure, then, may have been the starting point of this tumour, it seems to have had its beginning in a cell or cells of the walls of a blood vessel, and to have developed a type of structure that, from its vascularity, has been deemed worthy of a special designation—namely, angio-sarcomatous.

The after-history of the case will be of interest, for while there seems a very general opinion that metastasis in the angio-sarcomata is uncommon, unless when pigmented, there is not the same unanimity as regards local recurrence. Senn states distinctly that it is very rapid after excision, while Stengel goes the length of saying that it is uncommon, and that angio-sarcomata are in a measure benign. So far the present case supports this latter view, for two years have elapsed since the operation, and, I know that the patient has remained well, and that there have been no signs either of local recurrence or of metastasis. I confess that the very vascular appearance that the tumour presented at the time of its removal made me apprehensive of an early reappearance of the growth either locally or elsewhere.

ON BLINDING OF THE RETINA FROM EXPOSURE OF THE EYES WHEN WATCHING THE ECLIPSE OF THE SUN.*

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MR. C. J. B., aged 40, came to me on May 29th, 1900, and stated that on the previous day he was watching the eclipse of the sun intently. It may be remembered that the eclipse commenced about 3 o'clock, attained its greatest magnitude about 4, and was over by 5. He was looking first through a blue glass, then a ruby glass, but also for a short time with the naked eye. An hour or two later, when he was doing his work (examining boots, lasts, etc.), he noticed that direct vision was blurred, but outside this it was apparently unaffected. It was most marked on the same evening on attempting to read the newspaper, which he found it was impossible to do. The appearance was a hazy blankness, the shape being round, the outline being indistinct, and the haziness less marked towards the edges where the type of the newspaper was visible. At first he thinks the "blurr" in

* Read before a meeting of the Yorkshire Branch of the British Medical Association.

front of his eyes was about the size of a penny, but it soon became smaller.

On the first day I saw him (May 29th) direct vision = $\frac{5}{4}$, eccentrically, $\frac{5}{8}$. Each eye was similarly affected. There was some slight haziness round the papilla in each eye and the veins were a trifle full. There were no definite alterations at either macula. In fact, the changes visible with the ophthalmoscope were almost *nil*. No definite scotoma was detected and mapped out, but over the area of fixation vision was blurred. The patient asserted if he saw a person approaching him, and was looking at his head, he did not see the head but only the body and legs; in the same way, if he looked at a person's chest he saw the head and legs only. Potassium iodide in a mixture was prescribed and coloured protective glasses were ordered.

The central blurr became fainter and gradually decreased in area, and on June 8th direct vision = $\frac{5}{8}$ each eye. June 22nd: He says that the blurr has disappeared since about the 12th, leaving in its place the disc which is referred to later on. July 5th: Vision = $\frac{5}{8}$ each eye. November 7th: Says he is perfectly well. The patient has written the following account for me:

The total time the eyes were exposed to the sun would be about one hour, in periods of from two to ten minutes. That the glasses did not provide a sufficient protection for the eyes is proved, I think, by the fact that when they were first directed to the sun (every time the sun was looked at) nothing but a glare was visible. By steadily watching the sun the glare vanished in a few seconds, and the eclipse was plainly seen. No further inconvenience would then be noticed during that observation. The vision was found to be defective immediately after the first observation, but no notice was taken of it, as it was thought to be merely temporary, like going out of the dark into a brightly-lighted room. When the eyes were closed I saw a bluish disc about the size of the apparent disc of the sun; this would fade out after a few seconds, and, I think, come on again without opening my eyes in the meantime. This lasted for twenty-four hours after the eclipse. Not the slightest pain was felt. The effect was well marked when I looked at a straight line, from about the ordinary reading distance: there was a break of about one-eighth of an inch in the line. In reading, also, part of the line was blotted out. Straight lines were in no way distorted. Throughout my life my eyes have been of average strength, and I have never worn spectacles of any kind. During the last quarter of an hour the ruby and blue glasses were put together, as then the sun was very bright. Twice the eyes were turned upwards to the sun without any glass, but only for a second or two.

June 19th, 1901. Mr. B. says, the only thing he notices now is that he thinks his eyes are more affected by glare than formerly. For instance, after looking at the sun or electric light he does not think the eyes recover themselves as quickly as they previously did. He says he could not for some days after the original injury take a reading of the thermometer or barometer. A week after, when reading a Fortin barometer, as the vernier approached the top of the half-inch column of mercury he noticed a grey disc exactly between the top of the mercury and the vernier. He read the barometer at about 10 or 12 inches distance, and he calculates that the size of the spot was 0.026 inch in diameter (about two-thirds of a millimetre). This he observed with each eye, and just the same size. He does not think the size of this disc in any way altered up to six or nine months after the eclipse, merely growing fainter. Practically his eyes are all right now, but a careful search to-day allowed him to discover a very faint trace of this same disc, which would otherwise not have been noticeable. It is unmistakably less. On account of its faintness and tendency to disappear altogether he finds it difficult to measure it accurately. After a number of observations he concludes the spot has now a diameter of 0.014 inch, or about half what it was previously.

June 23rd. No ophthalmic alterations are visible in either eye. For the sake of making the examination complete the right pupil was dilated with a mydriatic.

Several instances have been recorded of injury inflicted by the direct effect of sunlight on the eye. Dr. Mackay, in the *Ophthalmic Review* for 1894,¹ collected probably the whole number which had been published up to that time. I have observed two cases in addition to the one which I record here, in each of which one eye only was affected. One was the case of a youth² aged 17, who was looking at the heavens through a powerful telescope, and in shifting the instrument he received the full blaze of the sun directly in the right eye which he was using. The immediate effect, he said, was as if the sight was "gone," and when I saw him seven weeks later he had still a "black dot" before the eye, which he described as being about the size of a pin's head. V.—1.5D. = $\frac{5}{8}$. As

far as I know the "dot" in this case was permanent. The patient asserted that in looking at a line he observed the portion looked at to be thicker (metamorphopsia). This phenomenon has been observed in a few of the recorded cases. It was absent in the case I now relate. Many years ago a case came under my notice of a girl³ who suffered from retinitis in consequence of receiving the sun, on a hot summer's day, full on her eye from a reflector which a boy passing her was using. The eye recovered well.

The instance related here is of interest as both eyes were affected, and the patient, an unusually intelligent man and an excellent observer, has been able to give a good account of his case. Here the ophthalmoscopic signs were practically nil; in some of the cases recorded fine changes have been noted at the macula, whilst in others similar indefinite alterations to those referred to in my present case have been observed; in others again no abnormal appearances have been mentioned. The prognosis appears to be favourable in these cases, vision, for practical purposes, being restored, but in many a scotoma, more or less distinct, has been left permanently. The cases illustrate the utter uselessness of the "glasses" too frequently used in observing eclipses.

REFERENCES.

¹ On Blinding of the Retina by Direct Sunlight. ² *Ophthalmic Review*, 1884, p. 72. ³ *Ibid.*, 1883, p. 141.

A REPORT OF NINE CASES IN WHICH HAAB'S MAGNET WAS USED FOR THE EXTRACTION OF FOREIGN BODIES FROM THE EYE.

BY

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THE cases reported here were under the care of Mr. Holmes Spicer at the Moorfields Eye Hospital. Our thanks are due to Mr. Mackenzie Davidson for his valuable help in localising the foreign bodies for us before operation.

Two of the cases resulted in recovery with almost perfect vision, $\frac{5}{6}$ with correcting glasses; one with vision of $\frac{5}{6}$, although at the time of admission there was iritis with hypopyon; two others had vision of $\frac{5}{6}$, with a possibility of further improvement by needling of opaque lens capsule; all these had perfect projection. In two other cases the eyes were in a condition of acute inflammation at the time of the operation, and in one case so much destruction had been produced by the large size of the piece of steel that the prospect of saving the eye was from the beginning hopeless. These eyes were lost.

CASE I.—T. T., aged 27. On May 23rd, 1900, the left globe was penetrated by a chip of steel from a lathe. He had had very little pain or inconvenience since the accident. When seen at Moorfields on July 1st he was found to have a corneal scar and a traumatic cataract. The pupil was dilated under atropine, and the eye was fairly quiet. No red reflex was obtained from the fundus. V.L.=hand movements. A foreign body was localised by the aid of x rays in the vitreous, 1.3 cm. behind the centre of the cornea.

On July 4th the extraction of the foreign body was attempted. The patient's head being put on a level with, and at a distance of a few feet from, Haab's magnet, the electric current was switched on gradually. At the same time the patient's eye was approached to the terminal, and he at once experienced pain. The foreign body was seen to come forward through the lens, and to take up a position on the lower pupillary border of the iris.

The patient, who had previously been sitting on a stool in front of the magnet, was transferred to the operating table. At this point the foreign body disappeared from view. An incision was made with a keratome at the lowest part of the corneo-scleral ring. The curved terminal of the horseshoe magnet was introduced into the anterior chamber. The foreign body was drawn over the pupillary border of the iris and removed. Some lens matter was evacuated with a curette; a little inflamed vitreous was also removed.

On the patient's discharge, July 15th, the eye was quite quiet, and the remainder of the lens matter was becoming absorbed.

On December 10th Dr. Edgar Stephenson, of Liverpool, under whose care the patient originally was, most kindly sent us a note as to his condition. The pupil was quite clear; the lens matter was all absorbed, but there were some capsular remains in the periphery. V.C. sph.+11 D.= $\frac{5}{6}$; V.C. sph.+15 D.=J.r. The patient has been back at work for some months, and has had no trouble of any kind with his eye. Size of F.B.=6.5 mm. x 2 mm. x 1 mm.

CASE II.—W. N., aged 16. On March 16th, 1900, a piece of steel flew into the patient's left eye from a chisel. He was found to have a scar at the outer part of the cornea, a hypopyon, and iritis. Both cornea and lens had been wounded; there was a dull red fundus reflex only; projection was good. V.=hand movements. On March 20th the hypopyon had disappeared. The foreign body was localised in the vitreous, 1.2 cm. behind the centre of the cornea and 4 mm. to temporal side. A few days later the patient was introduced to Haab's magnet, and the foreign body was withdrawn—without further wound of the lens—into the anterior chamber, through the lower periphery of the iris. Probably it came through the zonule. A section was made with a keratome, and on inserting a curved terminal of the horseshoe magnet, the foreign body adhered to it and was removed.

When the patient was seen eight months later the condition was as follows: An anterior synechia at the site of the corneal wound, an active pupil, and some anterior and posterior capsular opacity of the lens. After correction of hypermetropia patient could read $\frac{1}{2}$ partly. The patient now follows his trade of carpenter with ease.

CASE III.—W. R., aged 28. A piece of steel penetrated left globe four weeks previous to admission. He had attended another ophthalmic hospital where a small magnet had been tried unsuccessfully and where excision had been recommended. When seen, December 20th, 1899, there was a corneal wound to the inner side, and a nebula just above the centre of the cornea; there were also definite signs of iritis. The lens was clear; there were vitreous opacities, V.L.=fingers at 4 feet. The tension was diminished. On introducing the patient to Haab's magnet, the foreign body was drawn just over the pupillary border of the iris, but fell back again. Owing to failure of the current the small magnet could not be used, and further operation was deferred. Later, the patient was x-rayed, and the foreign body localised at the back of the vitreous. Haab's magnet being applied (January 13th, 1900) the foreign body was drawn into the anterior chamber. After a corneal section had been made with a keratome, the small magnet withdrew the particle. Some lens matter was curetted; it was also necessary to perform a small iridectomy. The patient was seen on January 20th of this year. He was found to have a thick capsular membrane, through which the details of the fundus could not be seen. Projection was perfect. V.L.C. sph.+10 = $\frac{5}{6}$. Field good.

CASE IV.—A. P., aged 23. Came to the out-patient department April 4th, 1900, complaining that a piece of steel had struck his right eye. He thought that nothing remained in it. He said that the fragment was $\frac{1}{2}$ inch long, and had been found on the ground after the accident. On examination there was found to be slight conjunctival injection, a vertical wound in the outer hemisphere of the cornea, and some iritis. The lens was becoming opaque. V.R.=hand movements. The tension was diminished. He was treated as an out-patient until April 7th. In the interval he was x-rayed and the foreign body was localised in the vitreous, probably close to the retina. He was admitted to the hospital, and Haab's magnet being applied, the foreign body was drawn into the anterior chamber. The patient was then anaesthetised; with a Graefe knife a section was made upwards, and the foreign body was extracted with ease by the small magnet. Some lens matter escaped, and some was evacuated with a curette. Iris prolapsing a small iridectomy was done. The patient was seen January 20th, 1901. A shrunken, calcareous capsule was found to be present, which almost entirely blocked the pupil. On either side was seen a faint red fundus reflex. V.R.C. sph.+10 = $\frac{5}{6}$. Size of F.B.=5.5 mm. x 3 mm. x 2 mm.

CASE V.—W. B., aged 42, first came to the hospital on September 9th, 1897, having been struck in his left eye with a piece of steel from a tool ten weeks before. There was then a scar on the cornea, the lower part of the lens was opaque; no details of the fundus of the eye could be seen. The eye remained quiet while he was watched for a period of three months; no operation was thought advisable, as there was no evidence of the presence of a foreign body in the eye, and he ceased to attend. He returned to the hospital in September, 1899. On examination the eye was quiet; the lens was partly opaque; a red reflex was obtained from the upper part of the fundus, but no foreign body was seen. On November 3rd the foreign body was localised by the aid of x rays in the globe, situated on a horizontal plane running 1 mm. below the lower margin of the cornea, and 7 mm. back from the plane of the centre of the cornea, almost in the middle line. On November 5th the condition of the eye was as follows: Some general conjunctivitis; no visible wound; pupil irregular but active; lens opaque; no red fundus reflex.

On introducing the patient to Haab's magnet the foreign body was drawn into the anterior chamber, and removed by the small magnet, after a corneo-scleral section had been made. The patient was discharged at the end of a week, with the eye in a perfectly quiescent condition. On December 19th he was re-admitted. The pupil was irregular, but fairly active. The lens had absorbed, and a dense capsular membrane in the pupillary area remained. No details of the fundus could be seen.

V.L.C. sph.+10 = $\frac{5}{6}$. T.=normal. Projection good. The capsule was needed, and a good central opening made.

The patient continued to attend as an out-patient till February 10th, when his vision C. sph.+13 D.= $\frac{5}{6}$.

CASE VI.—W. M., aged 24, came to the hospital on October 25th, 1899. He had been struck that morning by a piece of steel in the right eye; he did not know how large it was, nor what became of it.

There was general injection of the globe; the cornea was dull all over; there was a wound extending from just above the middle of the cornea downwards and inwards to the edge. There was no anterior chamber, the aqueous still leaking away from the wound, through which the iris was freely prolapsed. The lens was wounded and was becoming opaque. Vision of the wounded eye amounted to perception of light only. The tension was markedly diminished, being about equivalent to T.—3.

On bringing up the patient to Haab's magnet, he complained of intense pain; the cornea became conical, as if pushed forwards by something within. On bringing the eye close to the pole of the magnet, the whole globe was seen to be considerably drawn forwards out of the orbit; the movement was visible to everyone around, and was certainly not less than $\frac{1}{2}$ inch. On examining the eye, a shining piece of metal could be seen in the anterior chamber.

The small magnet was then applied between the lips of the corneal wound, but the piece of metal was too large to extract. The wound was