

tically be disregarded ; but when injections are used, especial care should be taken to see that they have a free outflow.

8. Simple injections of pure water are often sufficient, but compound tincture of iodine, one part to four of water, is devoid of danger, and hastens recovery. This will usually check feter also ; but if it does not, salicylic acid or permanganate of potash in one-half or one per cent. solutions, may be employed. Carbolic acid is dangerous, as is boracic acid also.

9. Listerism would probably be advisable in city or hospital practice, but is of doubtful efficacy in the country, and under no circumstances should it be allowed to interfere with through drainage.

ARTICLE X.

CASE OF EMBOLISM OF THE UPPER TEMPORAL DIVISION OF THE LEFT CENTRAL RETINAL ARTERY. By WM. F. NORRIS, A.M., M.D., Clinical Professor of Ophthalmology in the University of Pennsylvania.

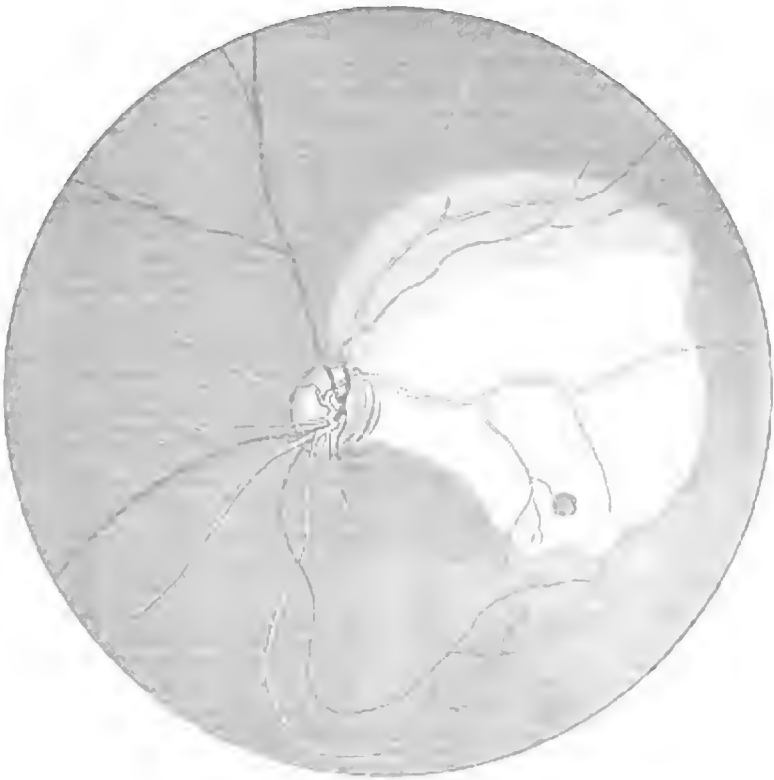
ON November 4, 1881, W. S., aged twenty-nine years, an intelligent German, applied at the out-patient department of the Wills Ophthalmic Hospital. He gave the following history: always had enjoyed good sight until four days ago, when, upon rising in the morning, he accidentally discovered "a mote before the left eye;" this defect coming on without any assignable cause. His general health had not been good for some time past. He was also accustomed to the abuse of alcohol and tobacco.

He was a small, exceedingly anæmic man, with light hair and blue irides; his lips and conjunctival mucous membrane so pallid as to make him appear almost bloodless. The vision of the right eye was $\frac{20}{L?}$, whilst

that of the left was only $\frac{20}{CC}$ in upper field, the patient being unable to fix

with this eye. Ophthalmoscopic examination of his left eye revealed the following picture: Media clear; disk oval 7×9 diameters; markedly grayish in its temporal half. Scleral ring continuous around entire disk, with a trace of conus to its nasal border, and a double pigment loop to its outer side, the inner loop being partially absorbed. Choroid slightly granular. Just previous to the bifurcation of the upper temporal division of the central retinal artery (this point being partially hidden by the corresponding vein), there was situated a whitish-yellow clot. The upper division of the bifurcation formed a whitish streak for about one-half a disk's distance above the disk, beyond this the vessel again contained red blood. The temporal division of the same trunk, was seen as a whitish almost horizontal streak for about four disks' diameter out from disk before vascular red reflex became visible, the first and second branch of this division distributed to the macular region, being barely visible. Corresponding to this area of blood supply, the retina was opaque, more markedly at the horizontal meridian, gradually diminishing upwards until it regained

Fig. 1.



Eye-ground of Left Eye. The dotted portions of the arteries indicate the extent of the loss of blood supply.

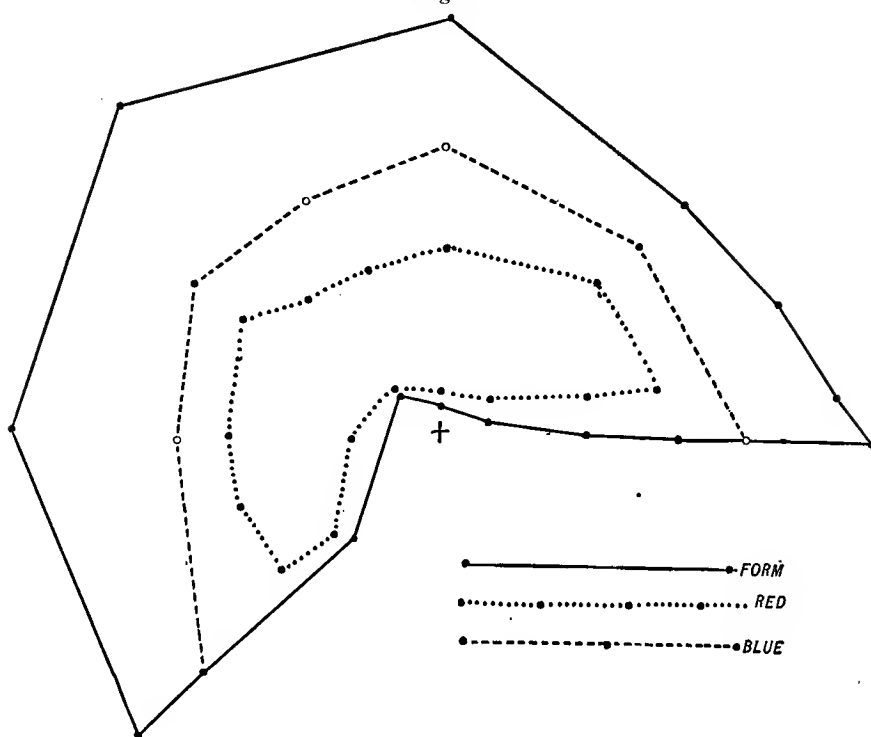
its transparency about five mm. beyond and to the nasal side of the upper division. The lower border of the opaque area, was sharp cut, but irregular in outline, presenting two teats corresponding with portions of the retina supplied by the two smaller branches of the temporal division of the artery. In the midst of this opaque area, the macula lutea appeared as a cherry-coloured spot. Refraction hypermetropic. The right eye did not present any anomaly, the refraction being about the same as in the other eye. H. about 2 D.

The urine was carefully examined, but neither albumen nor tube casts could be found, there being present but a few crystals of uric acid and some vesical epithelium.

Physical exploration showed both mitral and aortic regurgitant murmurs, the latter verified by a rapid diastolic fall in the radial artery.¹

¹ My friend, Dr. J. H. Hutchinson, was kind enough to examine the case, and substantiate the diagnosis of the heart sounds.

Fig. 2.



Field of Vision (reduced one-sixth) of Left Eye, November 4th.

His fields of vision for form, blue and red, were then carefully taken.¹

He was placed upon small doses of iodide of potassium, grains two, three times daily.

Seven days later, ophthalmoscopic examination of the affected eye, under the use of a mydriatic, showed that the cherry-coloured macular spot still remained. The lower division of the artery had blood in it, and could be seen entirely across the opaque patch of retina, which was reduced to one-half its original size and density; it being quite dense immediately above the macula, moderately so to its nasal side, and very faintly so to its temporal side. The teats of retinal haze fast disappearing. Vision remaining the same as on previous visit.

Ten drops of tincture of digitalis three times daily was now ordered in connection with the iodide of potassium.

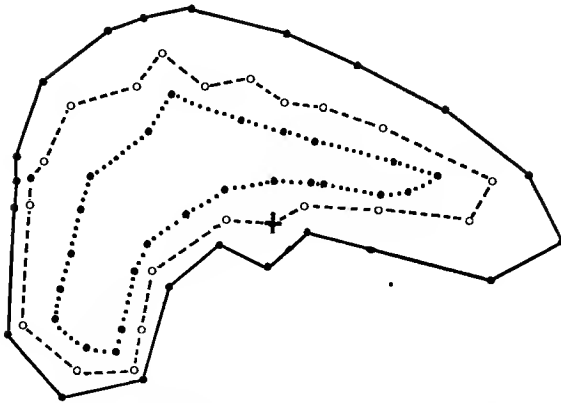
The field of vision was again taken which showed some very interesting changes. First, that central fixation for form had been wholly regained;

¹ It will be noticed that in the first field under date of November 4th, the day when first seen, presents to us two very interesting points.

First. The position and shape of the field give exactly the region of the affected area and its boundaries.

Second. The absence of any field at the point of fixation distinctly shows that the macula lutea was involved.

Fig. 3.



Field of Vision (reduced one-sixth) of Left Eye, November 11th.

secondly, that the field for blue came down to fixation point, embracing its upper half; thirdly, that the red field still remained eccentric, and fourthly, that the entire areas had diminished to at least one-half their original size.

A week later, November 18th, ophthalmoscope reported that the lower division of the artery had entirely regained its blood current. Contrast of cherry-coloured macula not so marked on account of the increasing vascularity of the neighbourhood, the patch being salmon coloured, and the densest haze just above the macular region. The upper division had also gained its blood current. Great disproportion between the arteries and veins in reference to their calibre. In the periphery of the retina, the calibre of the affected arteries still increased as compared with the papillary end of the same vessel.

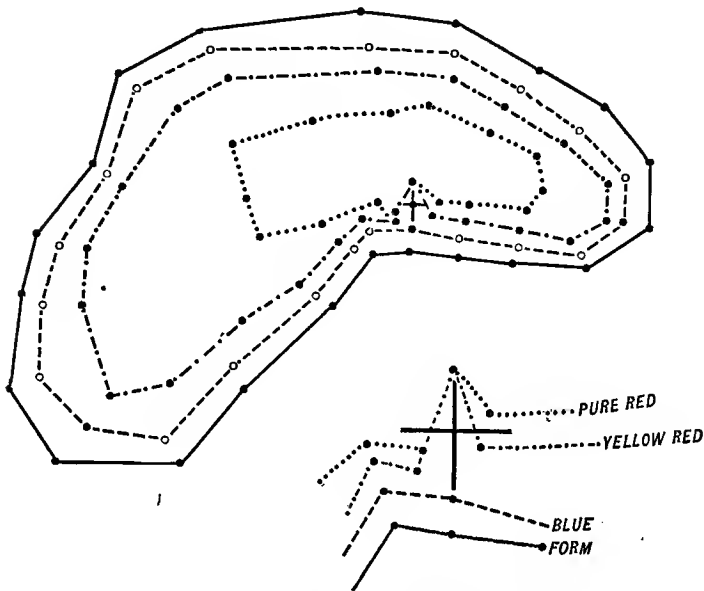
On November the 23d, retina much more hazy, especially around the disk, although a general haze was creeping over the entire membrane. Disk prominent, the vertical vessels being one dioptric in advance of the general level of the fundus. The cherry-coloured macular spot was decidedly granular, and the difference of contrast in colour between the macula and neighbouring retina not as apparent as on previous examination, the boundaries not being any longer as marked with certainty. Vision remains the same. Iodide of potassium stopped. Continued digitalis, and a laxative pill consisting of half a grain of blue mass with a grain of compound extract of colocynth, every night.

Patient reported on the 30th of the month with the assertion that he could see better in the morning just after rising, but vision soon diminished. The ophthalmoscope showed that both the branches were much smaller in the affected region, but larger in the periphery of the retina. Haziness of the retina very much cleared up, allowing entire outlines of disk to be seen. Lower outlines of retinal opacity could no longer be followed more than one-half way to the macula, except by careful focusing. Marked pulsation in the upper venous branch; fainter in the lower.

One week later, ophthalmoscope showed slight haze above the disk, preventing its superior outlines from being accurately seen, and extending along the main upper vein. Macula still granular and reddish. Serous swelling of the retina almost entirely disappeared above.

Fields of vision, taken for a third time, presented some curious and interesting features. The blue field had entirely encompassed the fixation point. The red field had pushed itself well down to the point of fixation,

Fig. 4.



Field of Vision (reduced one-sixth) of Left Eye, December 8th.

almost coming to the centre, leaving a small triangular open space with the base down. The red field was very sharply divided into two distinct areas: one of pure central red, and the other of yellowish eccentric red; the latter area almost double the size of the former. The entire areas of the three fields had increased so as to be one-third larger than at the previous examination.

December 14. O. S. $V = \frac{20}{cc}$ seeing top part of the letter E on a level with his eye, and all of it, eight to ten inches above. Whereas, on all previous visits, the letter was never seen lower than two or three feet above fixation line.

21st. Says "short breathed, and compelled to stop every second or third square whilst walking, and cannot sleep."

Ophthalmoscope showed that the red-cherry colour of macula had entirely disappeared, and was replaced by a dull reddish-brown. Retina everywhere transparent where former opacity had existed, except a slight trace immediately above the macular region.

Told to continue medicine, and to return on the following day to be admitted into the house; but upon his not returning, careful inquiry was made extending over three weeks, when it was found that he had been bedridden from the day of his last visit to the hospital, with what his family physician called inflammation of the stomach. He was afterwards seen by a well-known general practitioner, who diagnosed peritonitis; low fever,

quick feeble pulse, belly painful, swollen, and tympanitic. Patient dying on the seventh day of the attack; conscious to the last, never any headache, lower extremities swollen on last day; passing water up to time of death; death certificate of peritonitis. The medical gentleman who had the case under charge during the last days of his illness, said that he could not give a positive opinion as to whether the inflammation was idiopathic or traumatic. No post-mortem examination was made.

The want of a post-mortem examination is to be exceedingly regretted, although it might perhaps fairly be assumed that the peritonitis was embolic.

Embolism of the central artery of the retina is one of the most interesting as well as one of the rarest lesions revealed by the ophthalmoscope. As Förster remarks, the rarity in comparison with embolic affections of other parts is probably caused by the fact that the ophthalmic artery comes off nearly at a right angle to the internal carotid, and subsequently gives off its smallest branch, the *arteria centralis retinæ*, also nearly at the same angle. Emboli are thus readily washed past their orifices and carried on into their other branches. Since Gräfe, in 1859,¹ first diagnosed its occurrence, it has been a favourite explanation of most cases of sudden blindness accompanied by diminution in the calibre of the retinal arteries, and followed by a white retinal haze surrounding a cherry-coloured spot at the macula lutea; and although it has been shown that somewhat similar appearances may be produced by thrombosis of the veins or by retrobulbar neuritis, nevertheless, it remains in many cases the most probable diagnosis. We have since had distinct anatomical proof of the existence in some of the reported cases, in the autopsies reported by Schweigger,² Sichel, Jr.,³ Nettleship,⁴ Priestley Smith,⁵ and Schmidt.⁶ The eye is the only part of the human body where we can during life study the phenomena produced by embolism of an "end artery," and the appearances presented differ in two essential points from those established by autopsy in other parts: viz., there is no hemorrhagic infarctus formed, and no subsequent sphacelus of the retinal tissue. As regards the former, the intraocular pressure is probably sufficient to prevent regurgitation of venous blood into the capillaries of the retina, but in cases of embolism of a branch of the central artery, we have two examples of the formation of such an infarctus, one reported by Knapp,⁷ and one by Landesberg.⁸ Why such retinal hemorrhages should not ensue in all cases where the

¹ Gräfe, A. f. O., v. i. p. 136.

² Schweigger, Vorlesungen über den Gebrauch des Augenspiegels, 1864, p. 140.

³ Sichel, Arch. de Physiol. norm. et path., No. 1, p. 83-89 and 207-218, quoted by Leber.

⁴ Nettleship, R. L., Oph. Hosp. Reps., vol. viii. p. 9-20.

⁵ Priestley Smith, Brit. Med. Journ., April 1874, p. 452.

⁶ Schmidt, A. f. O., xx. 2, p. 287-307.

⁷ Archives of Ophthalmology and Otology, 1869, vol. i. p. 64-84.

⁸ Landesberg, Arch. f. Aug. Ohren Heilk., iv. 1-106.

embolism is limited to a branch of the central artery is not clear, since the venous blood from the adjacent retinal areas, supplied by other branches, could, without hindrance, find its way into the veins and capillaries of the artery which was plugged by the embolus. It is, however, certainly absent in some cases, as in that of Saemisch,¹ and in the one above related; besides, in several other cases, there is no mention of retinal hemorrhages. The fact that the retina does not entirely die when deprived of its own proper circulation is probably owing to the proximity of other parts from which it may, by endosmose, absorb a certain amount of nutriment—notably from the broad capillaries of the choroid. Among the interesting features presented by the above-described case are the exact correspondence of the limitation in the nasal field with the area of starved retinal tissue; the concentric contraction of the field seven days later corresponding with a slight swelling of the disk and a slight haziness throughout the retina, entirely distinct from the dense cloud in the affected embolic area; and lastly, in the evidences presented of vigorous collateral circulation in the macula lutea as evidenced by the gradual descent of the boundaries for form and for blue below the point of fixation, while the line for red almost reached down to it. I have no doubt as to the accuracy of the above results, as the fields were taken most carefully by two observers. In testing for perception of colour a centimetre square of blue and of red pasted on a dead black surface, was used at ten inches distance. Other interesting cases of embolism of a branch of the central artery, besides those previously referred to, are reported by Hirschmann,² Horner,³ Leber,⁴ Steffan,⁵ Landesberg,⁶ Barkan,⁷ Knapp,⁸ and Schoen.⁹

ARTICLE XI.

THE QUESTION OF CONTAGION IN LEPROSY.¹⁰ By JAMES C. WHITE, M.D.,
Professor of Dermatology in Harvard University.

PROBABLY no disease has so excited the fears of mankind and the attention of physicians throughout all historic time as leprosy, for no other has

¹ Saemisch, *Klin. Monatsbl. f. Augenheilk.* 1866, pp. 32–37.

² Hirschmann, *Klinische Monatsbl. f. Augenheilkunde*, 1866, p. 37.

³ Horner, quoted by Zehender, *Handb. der Augenheilkunde*, 1876, vol. ii. p. 125.

⁴ Leber in *Gräfe-Saemisch*, vol. v. p. 544.

⁵ Steffan, quoted by Leber, *loc. cit.*

⁶ Landesberg, *Arch. of Ophth. and Otol.*, vol. iv. p. 106.

⁷ Barkan, *ibid.*, vol. iii. p. 175.

⁸ Knapp, *ibid.*, vol. iv. p. 178.

⁹ Schoen, *Lehre von Gesichtsefelden*, 1874, pp. 93–94.

¹⁰ Read at the meeting of the American Dermatological Association at Newport, August 30, 1882.