The fundus of the human eye : an illustrated atlas for the physician / by Ernest Clarke.

THE FUNDUS OF THE HUMAN EYE

AN ILLUSTRATED ATLAS FOR THE PHYSICIAN

ERNEST CLARKE

OXFORD MEDICAL PUBLICATIONS

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AN ILLUSTRATED ATLAS FOR THE PHYSICIAN

By

ERNEST CLARKE

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PREFACE

THIRTY-FIVE years ago I translated and edited Haab's *Atlas of Ophthalmoscopy*. That little book was very popular, but has been out of print many years.

The advent of the luminous ophthalmoscope has now brought ophthalmoscopy within the reach of all, and this instrument is becoming as much a part of the physician's equipment as the stethoscope.

But although now it is easy to see the fundus of the eye, it is not so easy to interpret what is seen, and the observer wants a small, handy atlas that he can easily consult. It is hoped that this little book will supply this need. Only the commonest fundus changes have been illustrated, and the description of the plates has purposely been made as brief as possible.

My thanks are due to Messrs. Theodore Hamblin, of Wigmore Street, who have placed their splendid collection of paintings at my disposal.

I am specially indebted to my colleague, Mr. A. H. Levy, for his help in choosing the most typical pictures of eye disease and in writing the legends.

ERNEST CLARKE.

Wimpole St., W.1.

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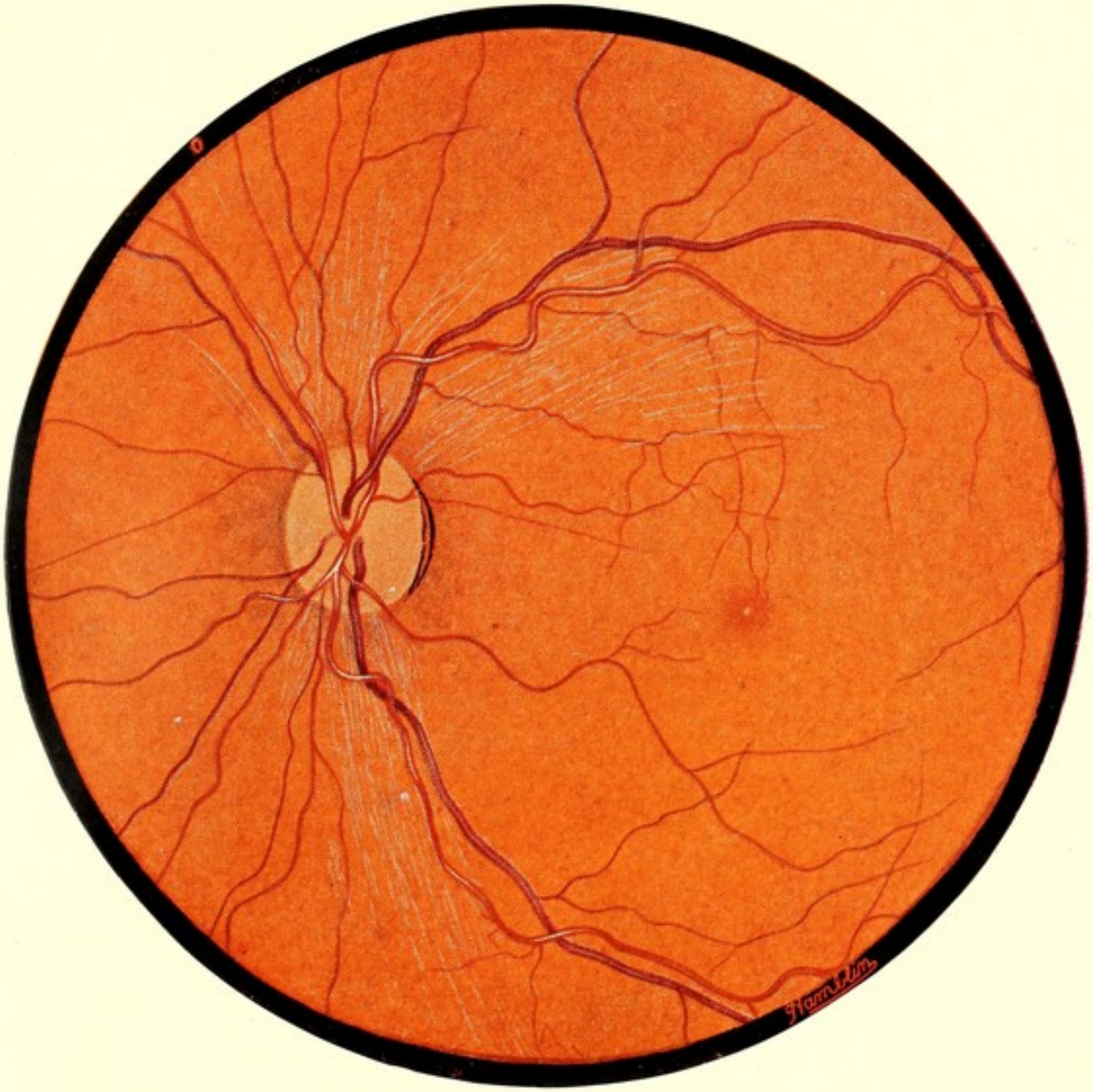


1. NORMAL FUNDUS

THE colour of the disc is a little redder than normal; it may, however, be even darker and indistinguishable from the retina.

The fovea shows as a bright spot in the darkened area of the macula.

The striation radiating from the disc is not always seen.

Some of the arteries show the 'light reflex'.

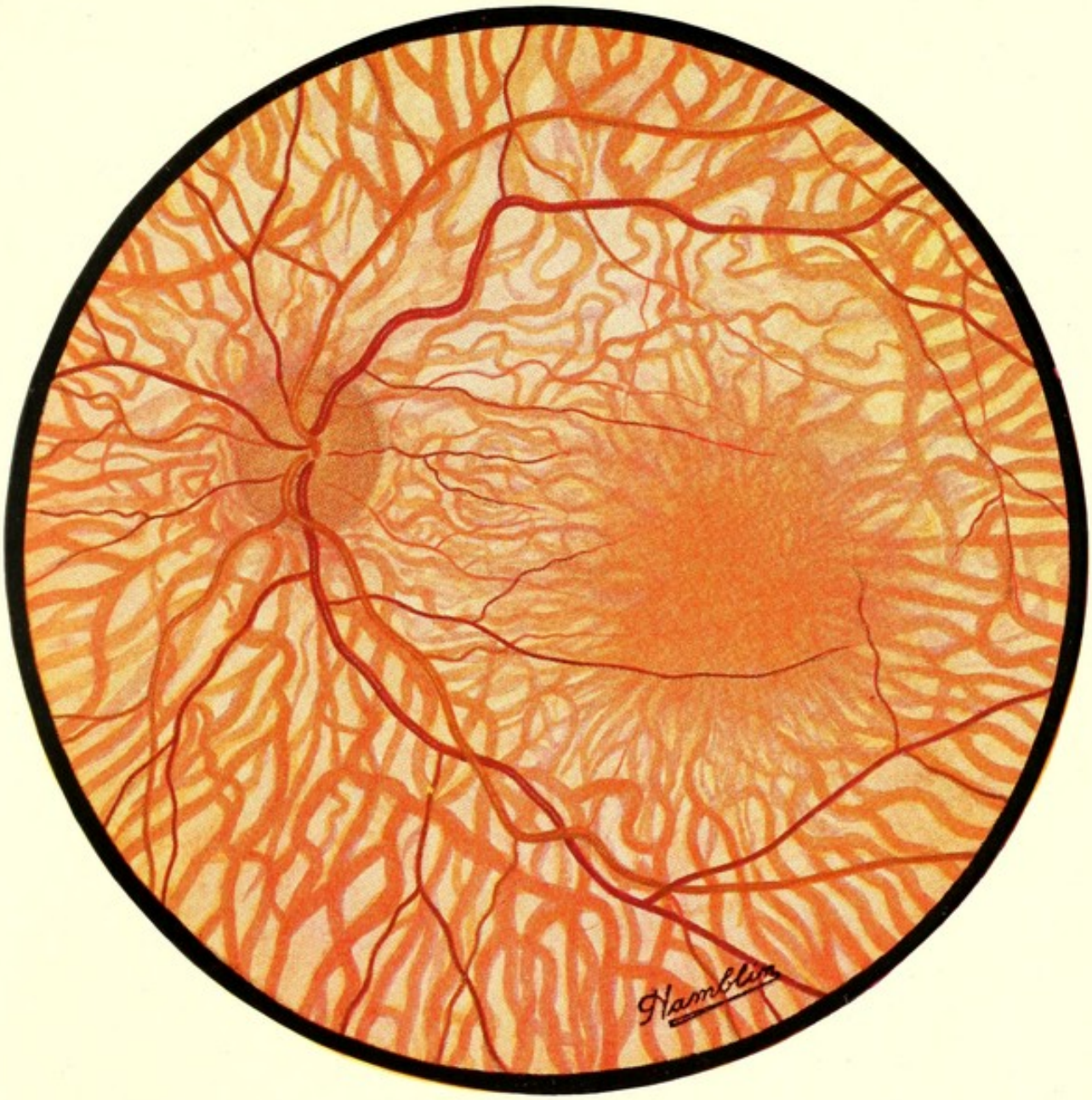
The 'choroidal' or pigment ring, formed by the heaping up of the retinal pigment, is very marked on the temporal side of the disc.

2. 'TIGROID' FUNDUS

In dark-coloured persons the pigment between the choroidal vessels may be particularly dense, as in the above.

This appearance is sometimes found in old people, and is then generally due to defective pigment in the retinal epithelium.

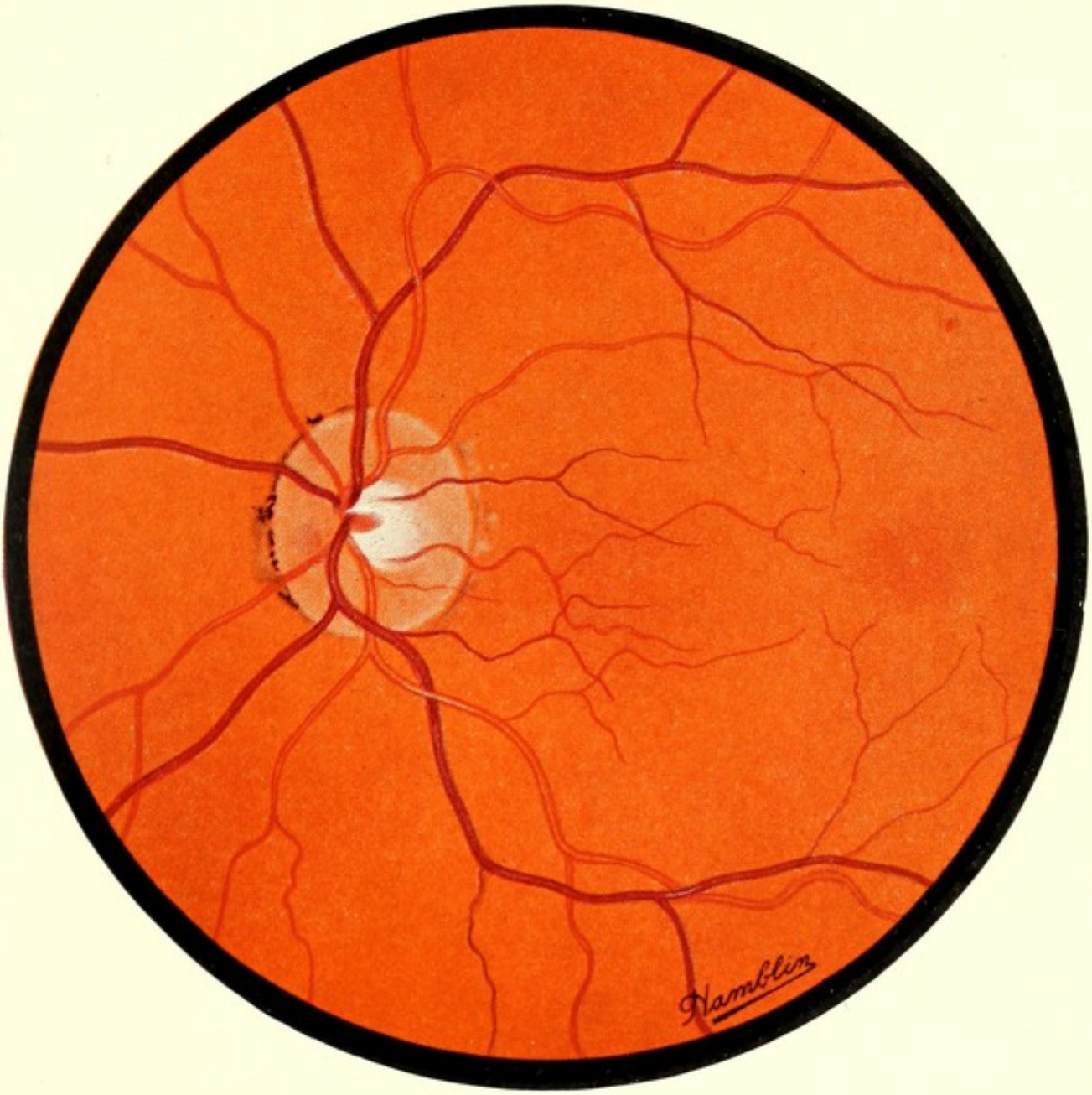
Both the 'choroidal' and scleral rings are present, forming the boundaries of the disc.



3. ALBINOTIC FUNDUS

The absence of pigment allows the choroidal vessels to be seen plainly against the white sclera, except in the macular region, where they are smaller and more numerous.

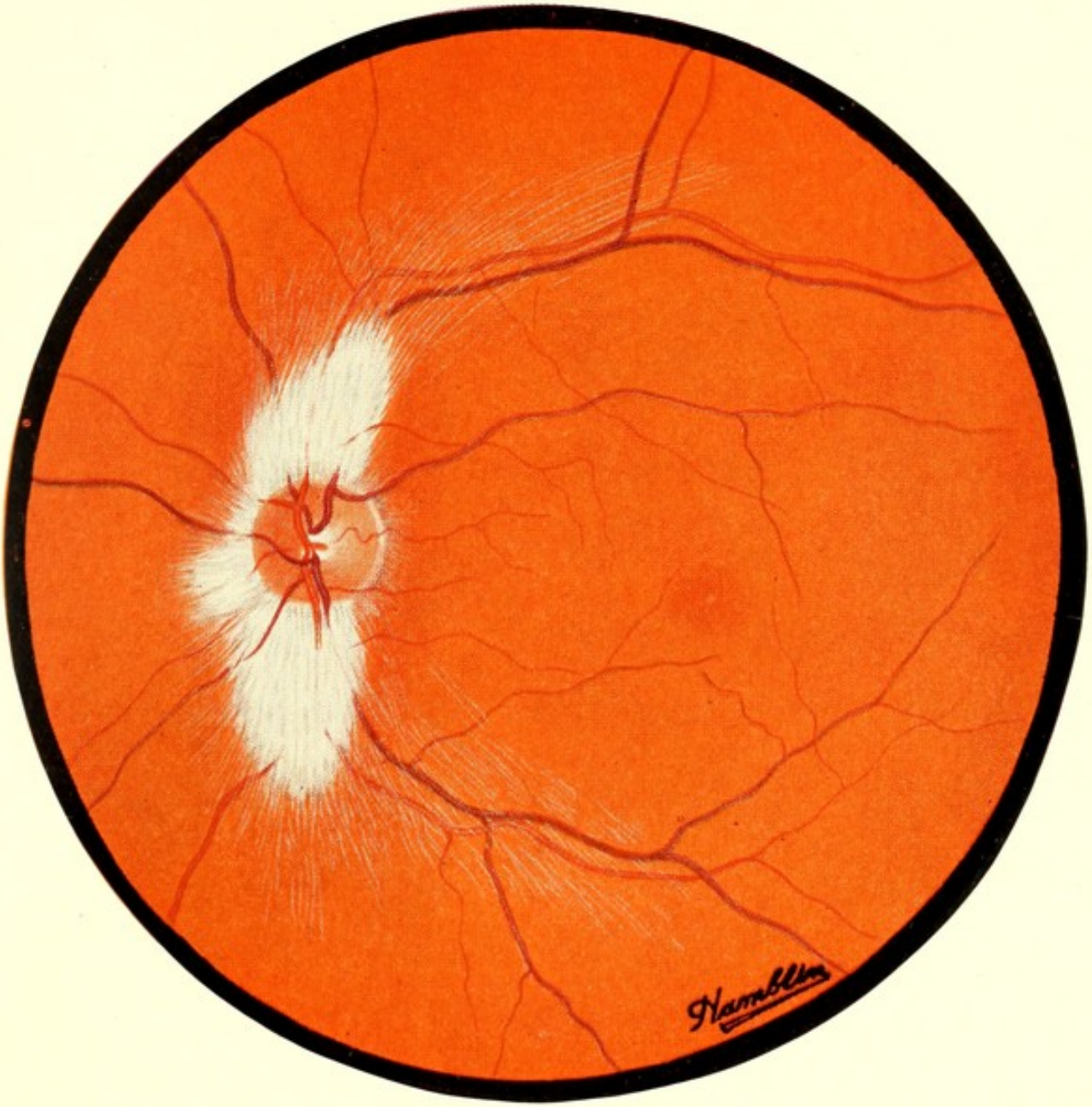
The disc appears unnaturally dark by contrast, and is not well-defined, as both 'choroidal' and scleral rings are absent.



4. NORMAL FUNDUS—'PHYSIOLOGICAL CUP'

SMALL physiological cup in centre of disc. Compare with Plates 13 and 16, where the cupping reaches the margin of the disc.

In the above the steeper portion of the cup is on the nasal side, which is the usual form.



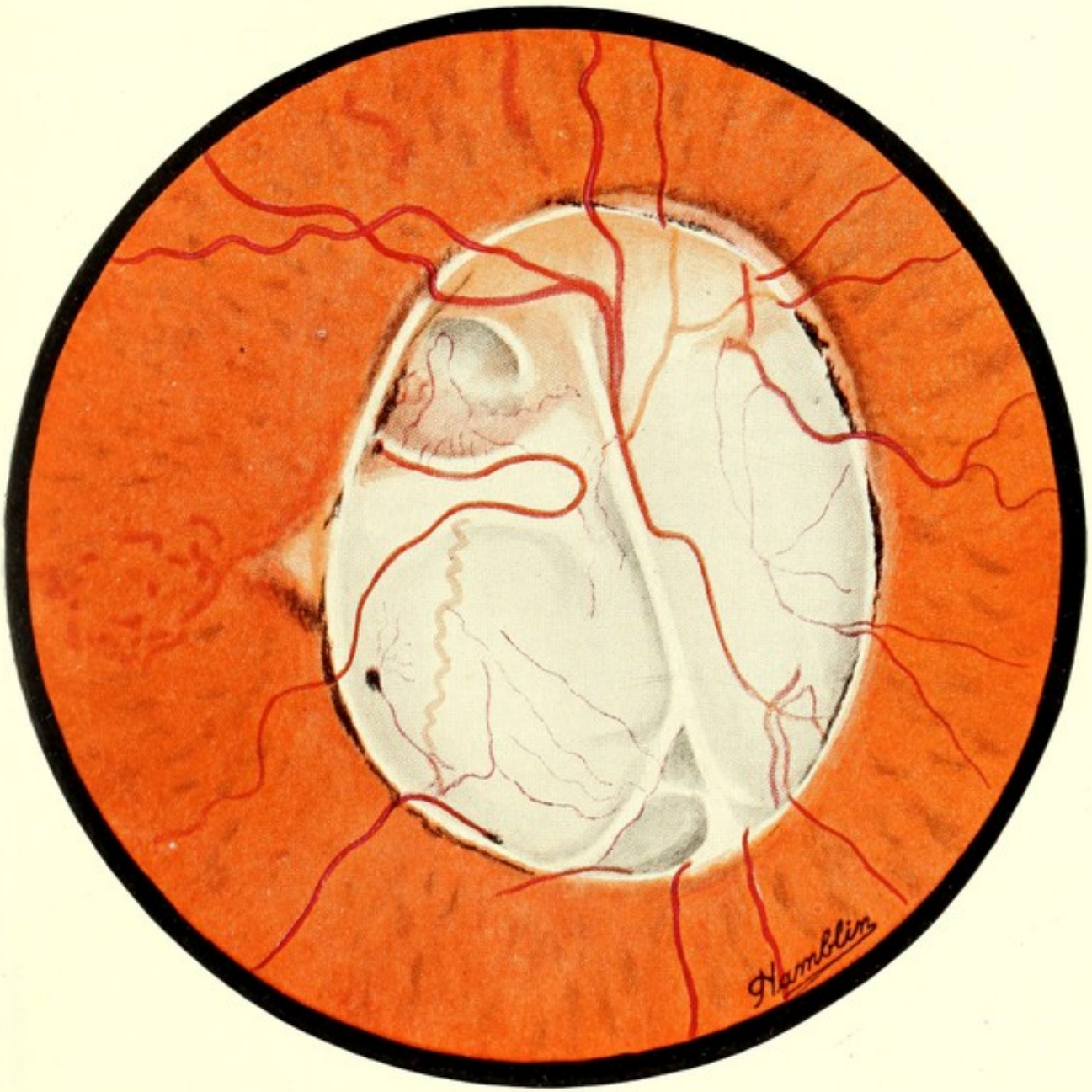
5. OPAQUE NERVE-FIBRES

Due to the presence of the medullary nerve-sheaths. Sometimes separated from the disc, but always characterized by the brush-like extremities. The vessels running in the nerve-fibre layer are sometimes superficial and sometimes deep and obscured. Compare with Plates 21 and 50.

6. CONGENITAL MALFORMATION

Coloboma of the Choroid.

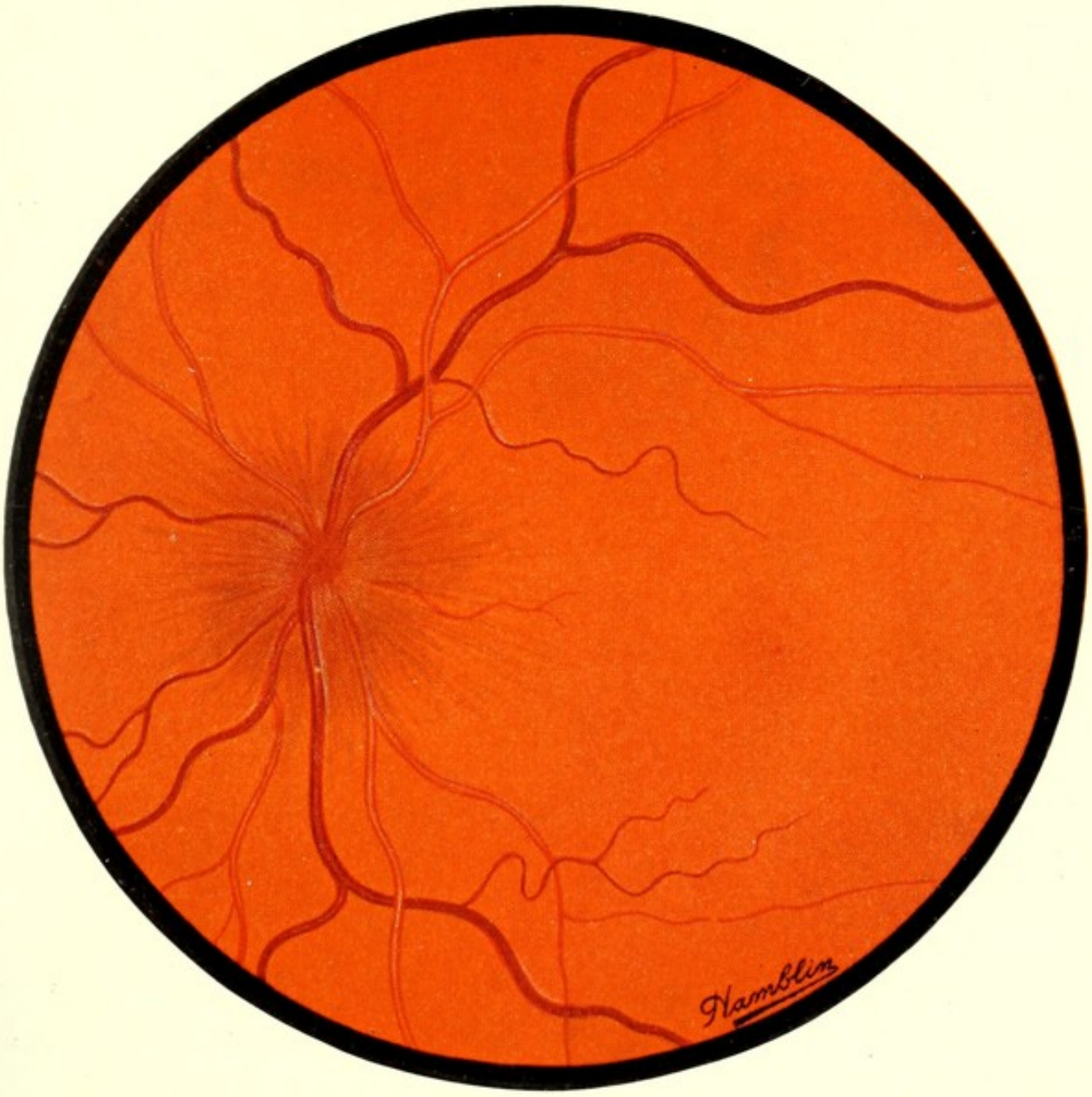
The choroid is absent over the area and the sclerotic exposed. There is also partial coloboma of the retina.



7. CONGENITAL MALFORMATION

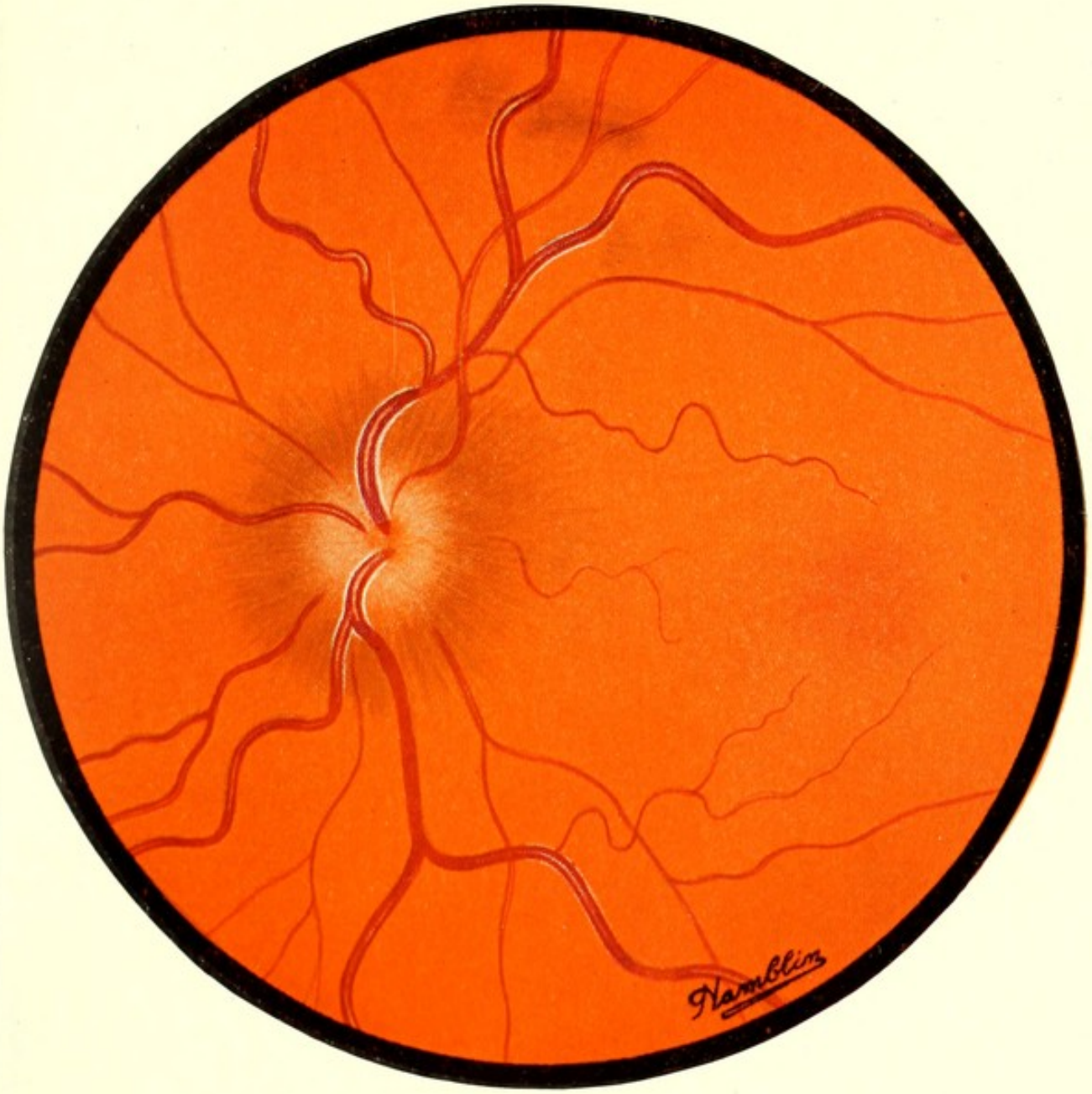
Coloboma of the Choroid and Optic Nerve.

NOTE the excavation of the sclerotic—'Ectatic Coloboma'.



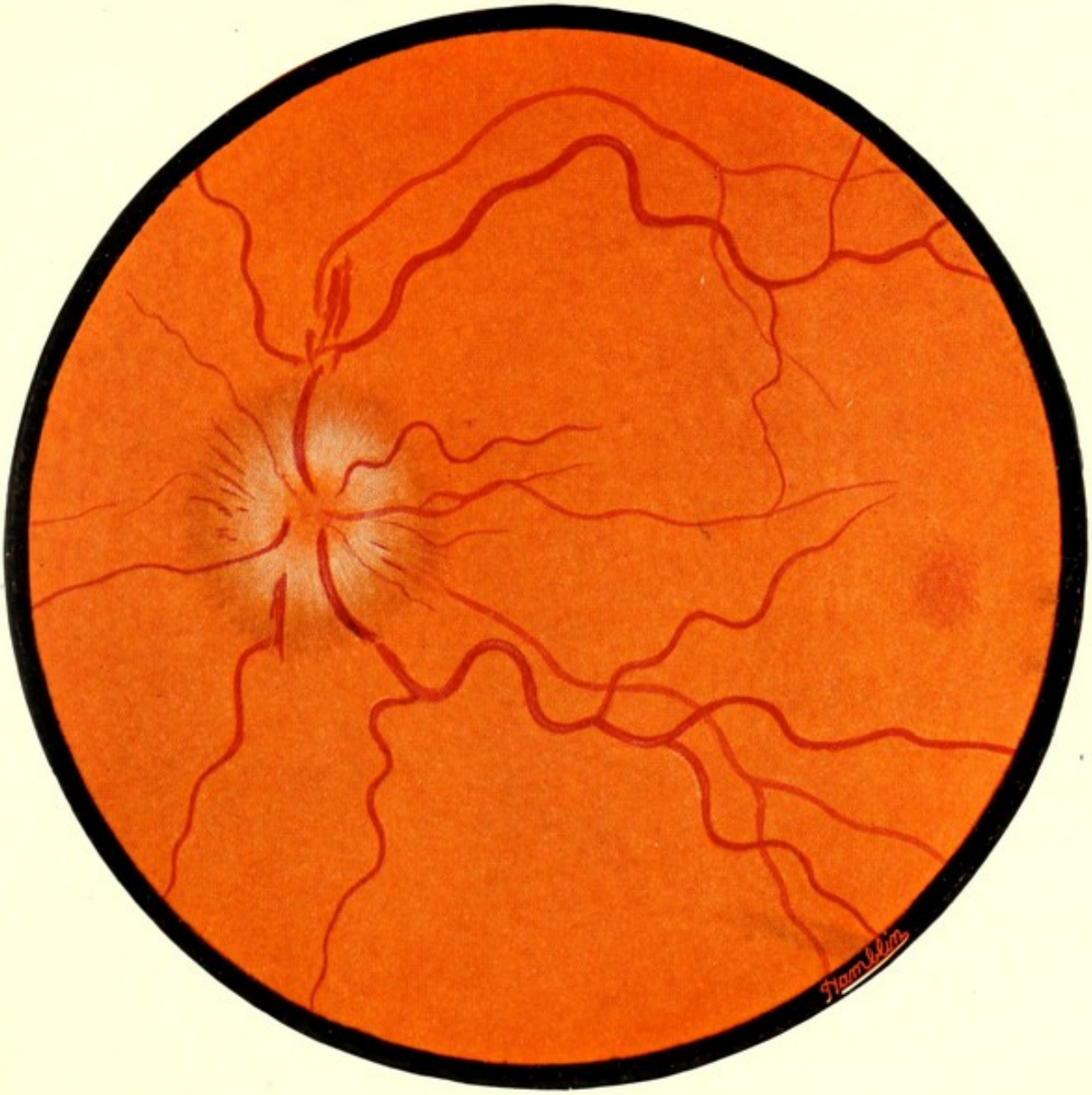
8. PAPILLOEDEMA (OPTIC NEURITIS) EARLY STAGE

PAPILLA slightly swollen, oedematous, ill-defined and blurred —veins engorged.



9. PAPILLOEDEMA (OPTIC NEURITIS) MORE ADVANCED STAGE

Swelling of the disc—veins engorged and tortuous.



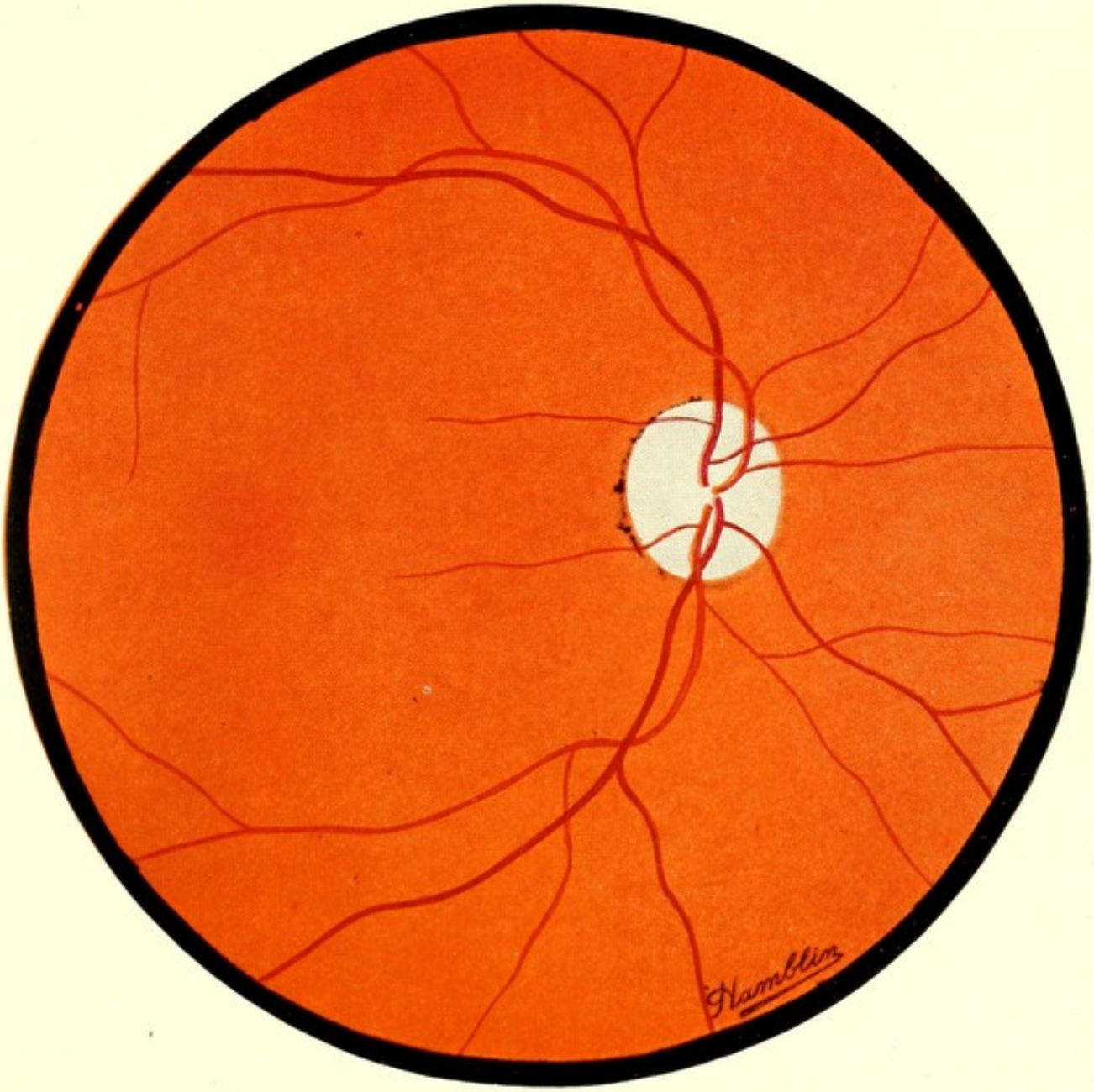
10. ADVANCED PAPILLOEDEMA—'CHOKED DISC'

(*Cerebral Tumour.*)

GREAT swelling of the disc—veins swollen and tortuous—small haemorrhages.

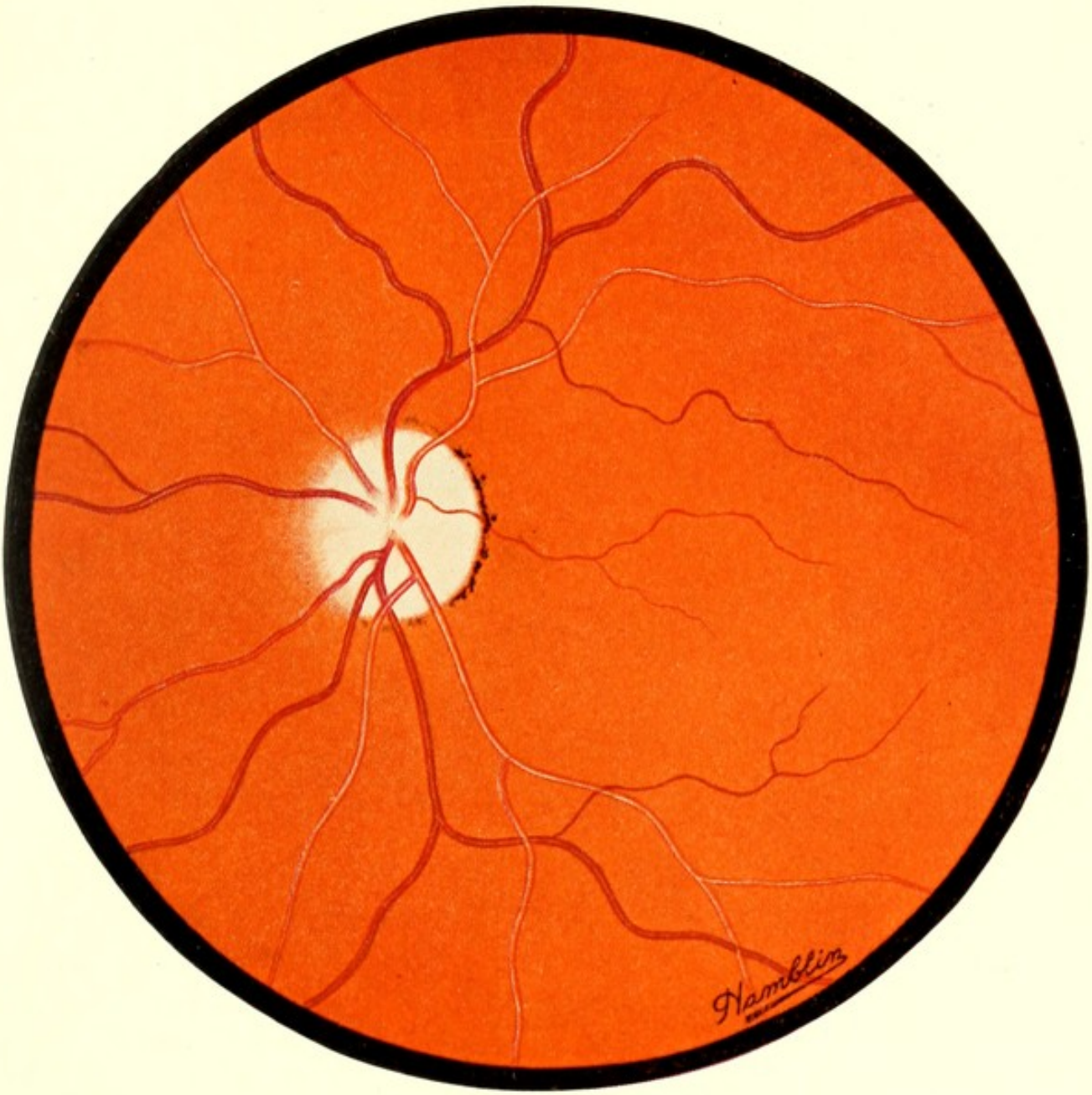
11. PAPILLOEDEMA (VERY ADVANCED STAGE)

SUPERFICIAL haemorrhages and exudates. Veins considerably swollen. Haemorrhages, mostly from the veins, due to the great obstruction to the venous outflow.



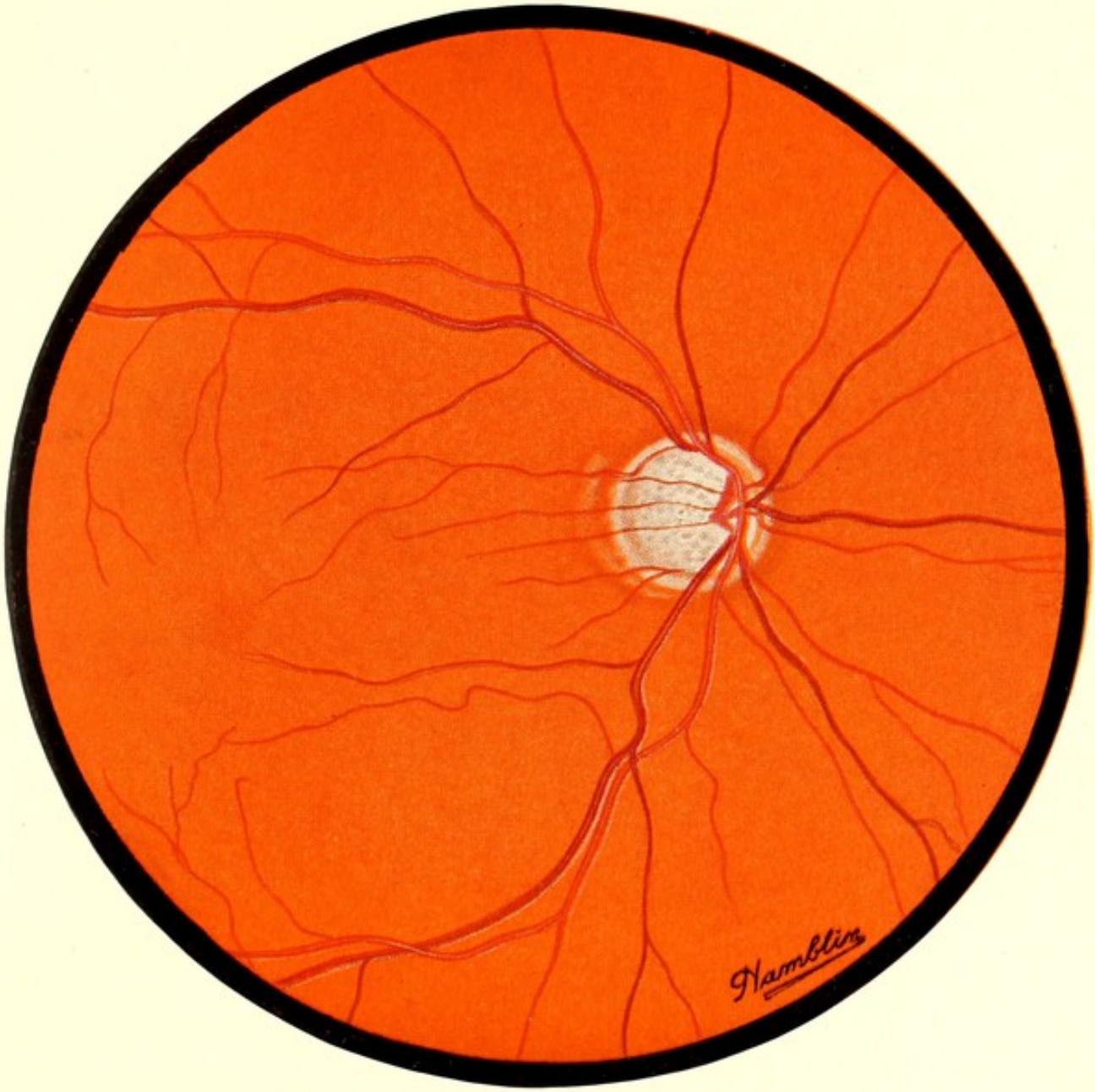
12. ATROPHY OF THE OPTIC NERVE

THE disc is very white and the margins are sharply defined. The vessels are of normal size.



13. POST-NEURITIC (SECONDARY) ATROPHY

DISC very blurred on nasal side and abnormally white. Physiological cup filled in.

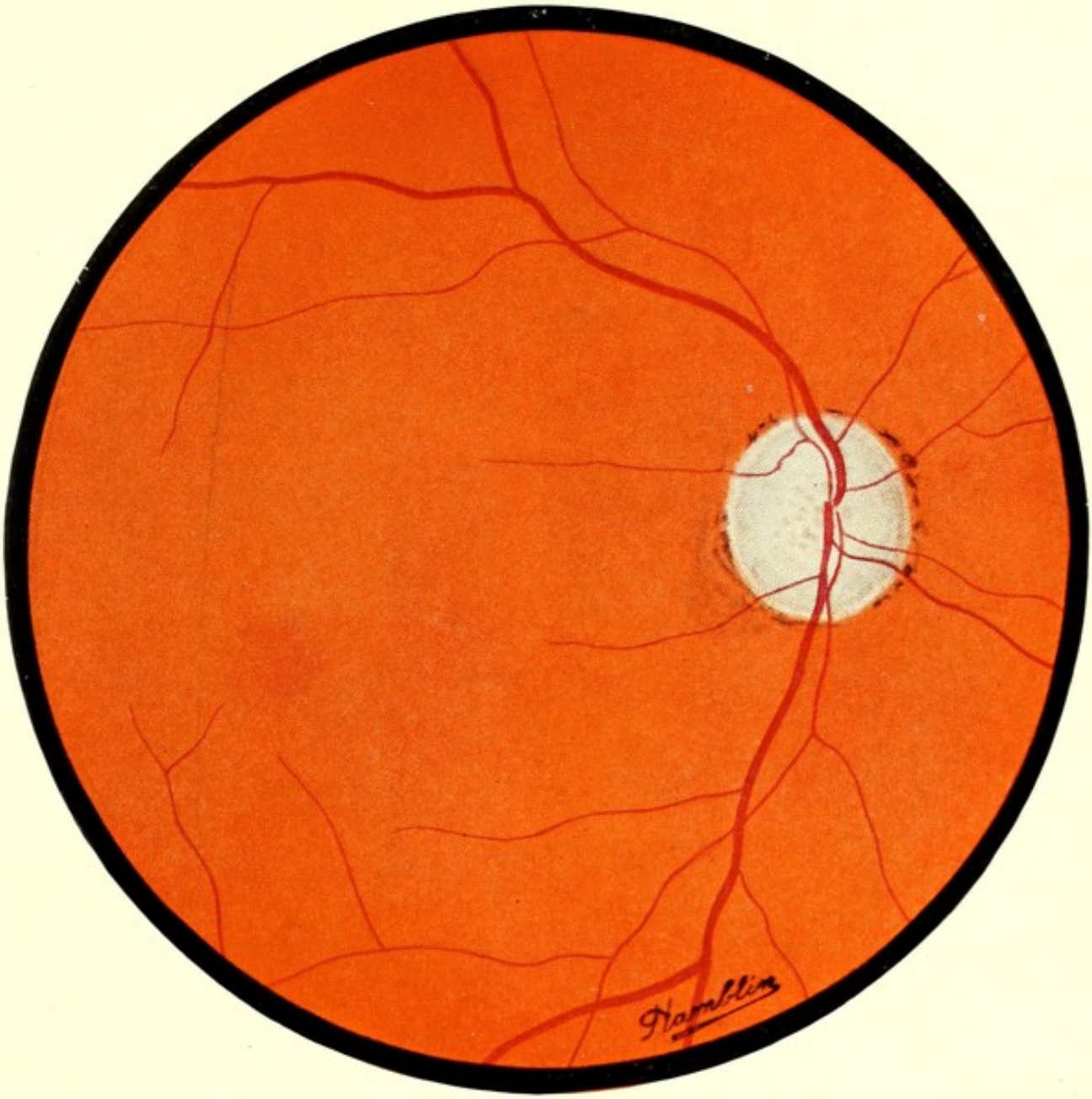


14. POST-NEURITIC (SECONDARY) ATROPHY

SHALLOW cup.

Lamina cribrosa very conspicuous.

Vessels diminished in size.

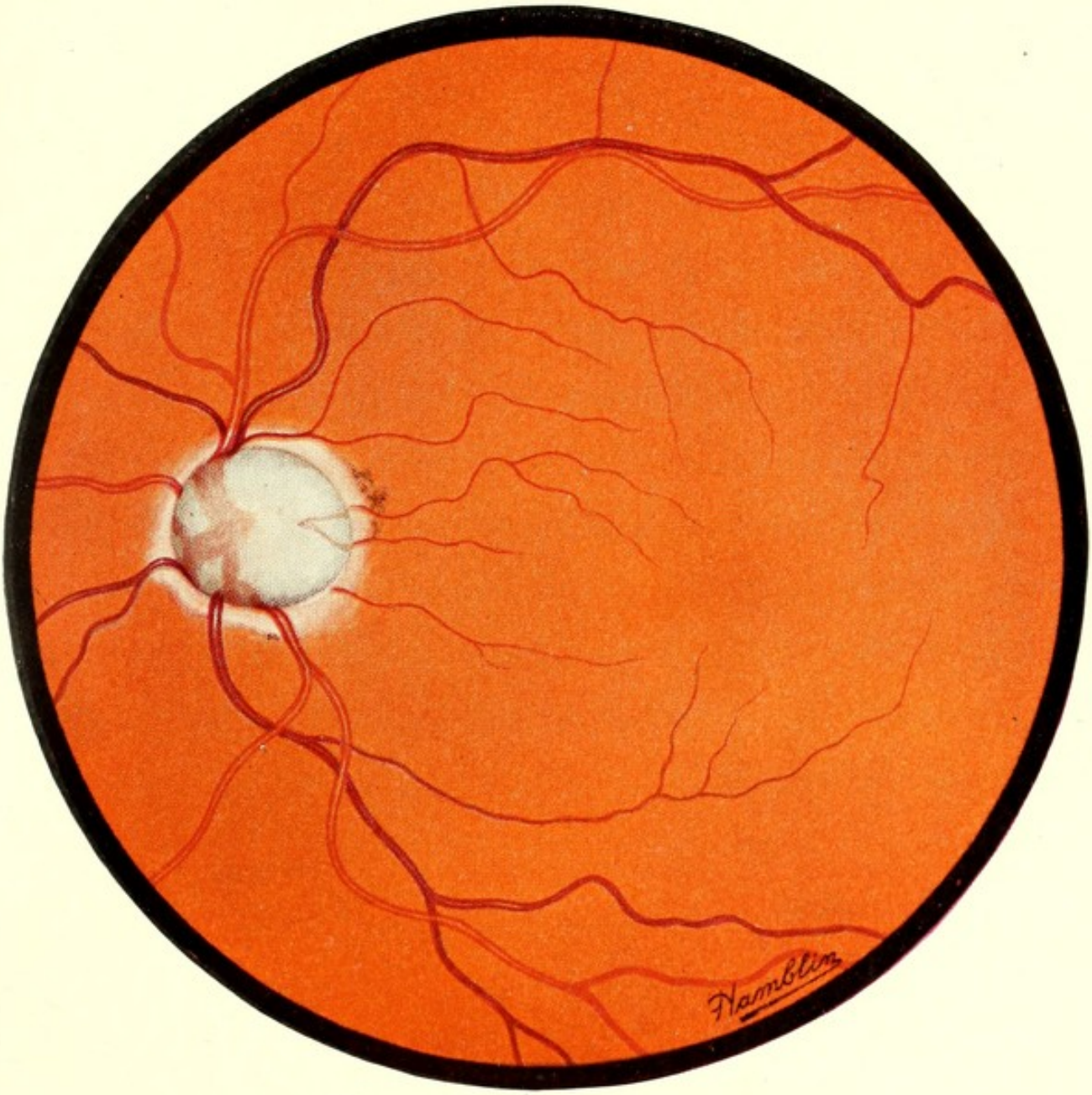


15. GREY ATROPHY OF OPTIC NERVE

THE connective tissue is exposed, the result of atrophy of the nerves.

The lamina cribrosa is visible.

The arteries are mere threads.



16. DEEP CUPPING AND ATROPHY OF OPTIC NERVE AS THE RESULT OF GLAUCOMA

ATROPHY of choroid surrounding the disc producing the 'glaucomatous halo'.

17. NEURO-RETINITIS ALBUMINURICA

Congestion and blurring of disc.

Numerous superficial haemorrhages.

Scattered exudates and the characteristic star-shaped figure at macula.

18. ALBUMINURIC RETINITIS OF PREGNANCY

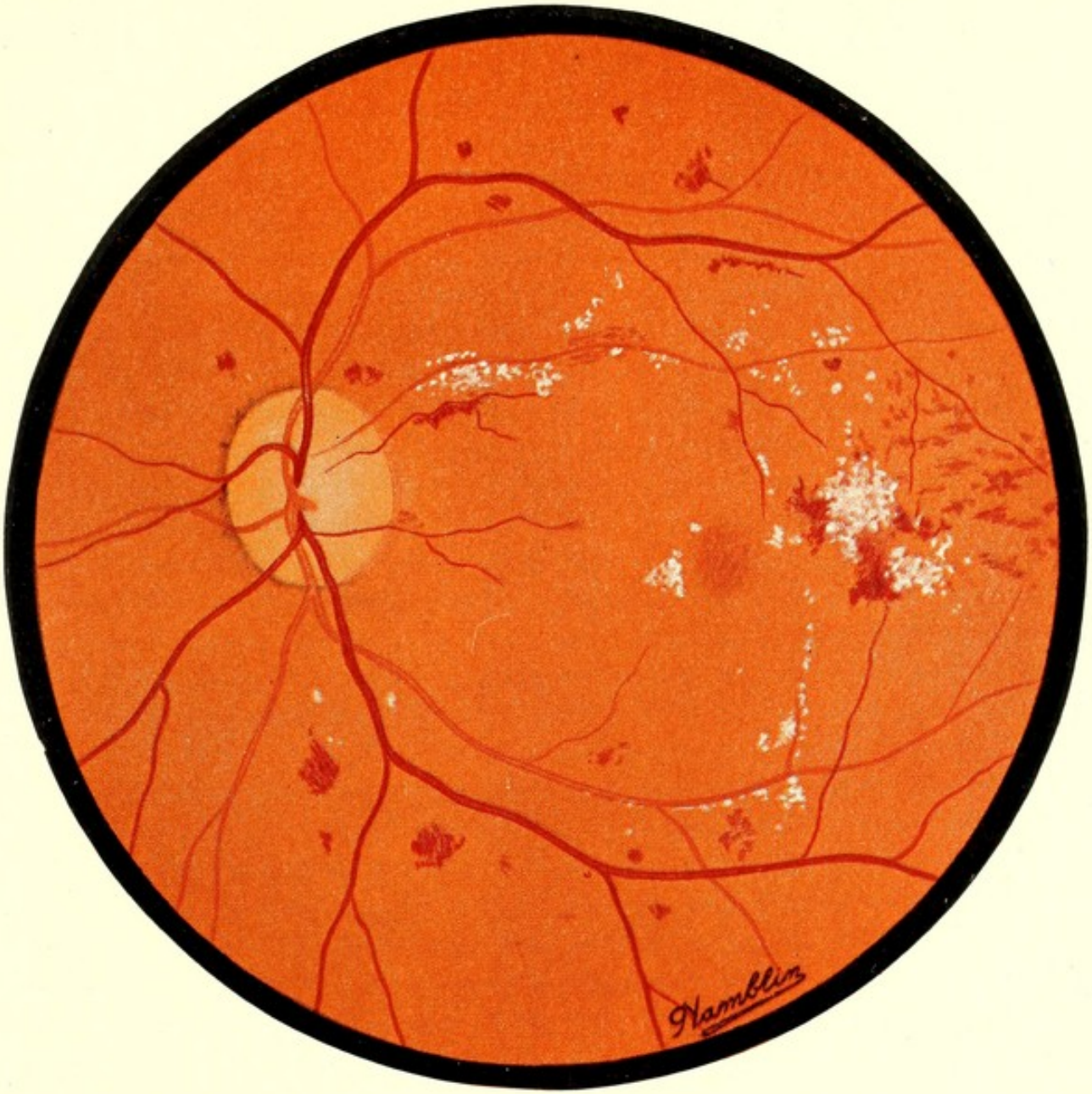
NUMEROUS flame-shaped retinal haemorrhages. Exudates rather massive and star-shaped figure not very conspicuous. Oedema of retina around disc, blurring its outlines.

19. NEURO-RETINITIS

Associated with chronic nephritis.

Haemorrhages and exudates.

Commencing arterio-sclerosis.



20. DIABETIC RETINITIS

Both haemorrhages and exudates are numerous, but small.

No star-shaped figure.

21. RETINITIS

ASSOCIATED with focal sepsis (septic antrum). Haemorrhages, exudates, and slight oedema of the disc.

Complete recovery after removal of sepsis.

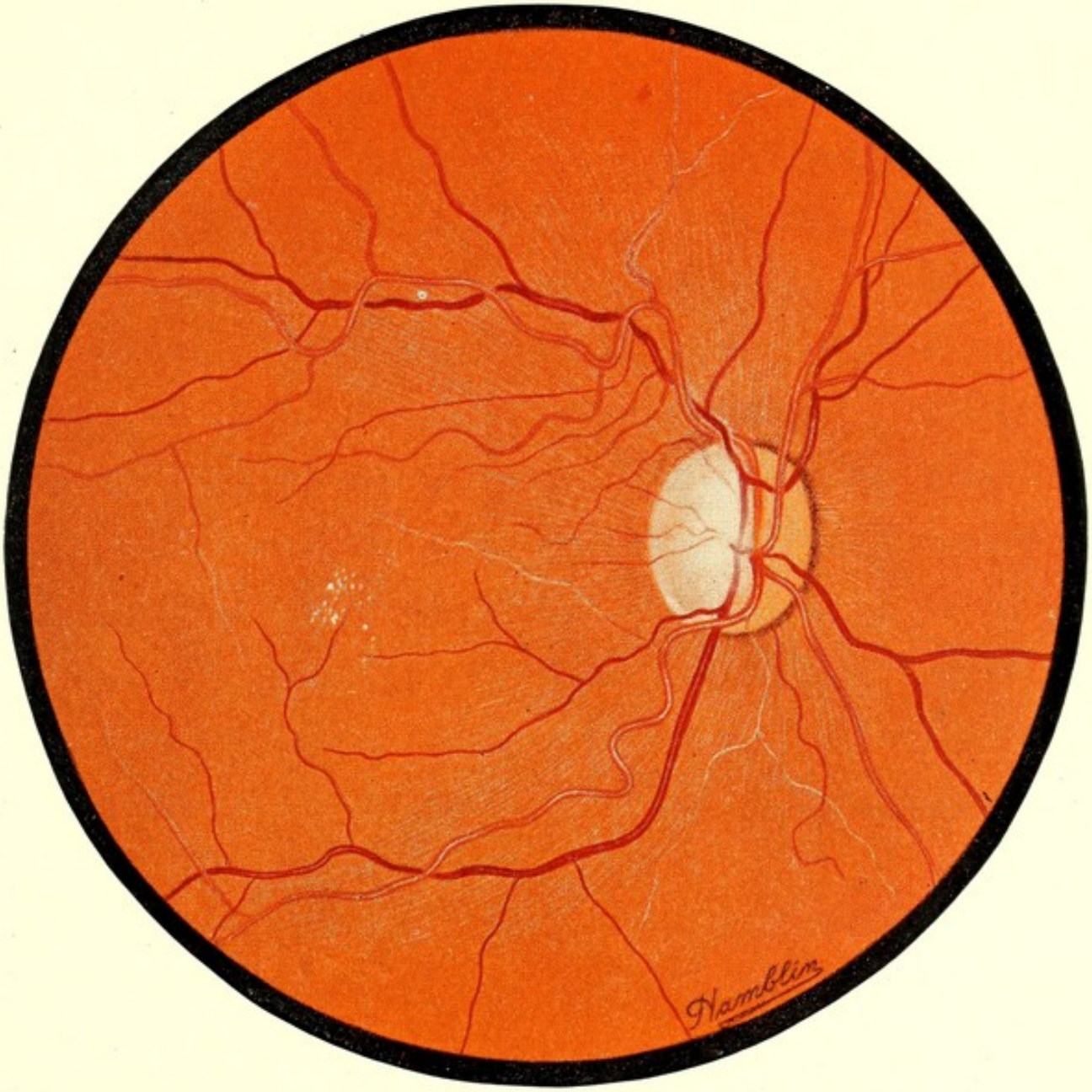
22. SEVERE NEURO-RETINITIS (SEPTIC)

ASSOCIATED with focal sepsis (teeth and antrum).

Disc swollen, large haemorrhages, exudates.

Complete recovery after removal of sepsis.

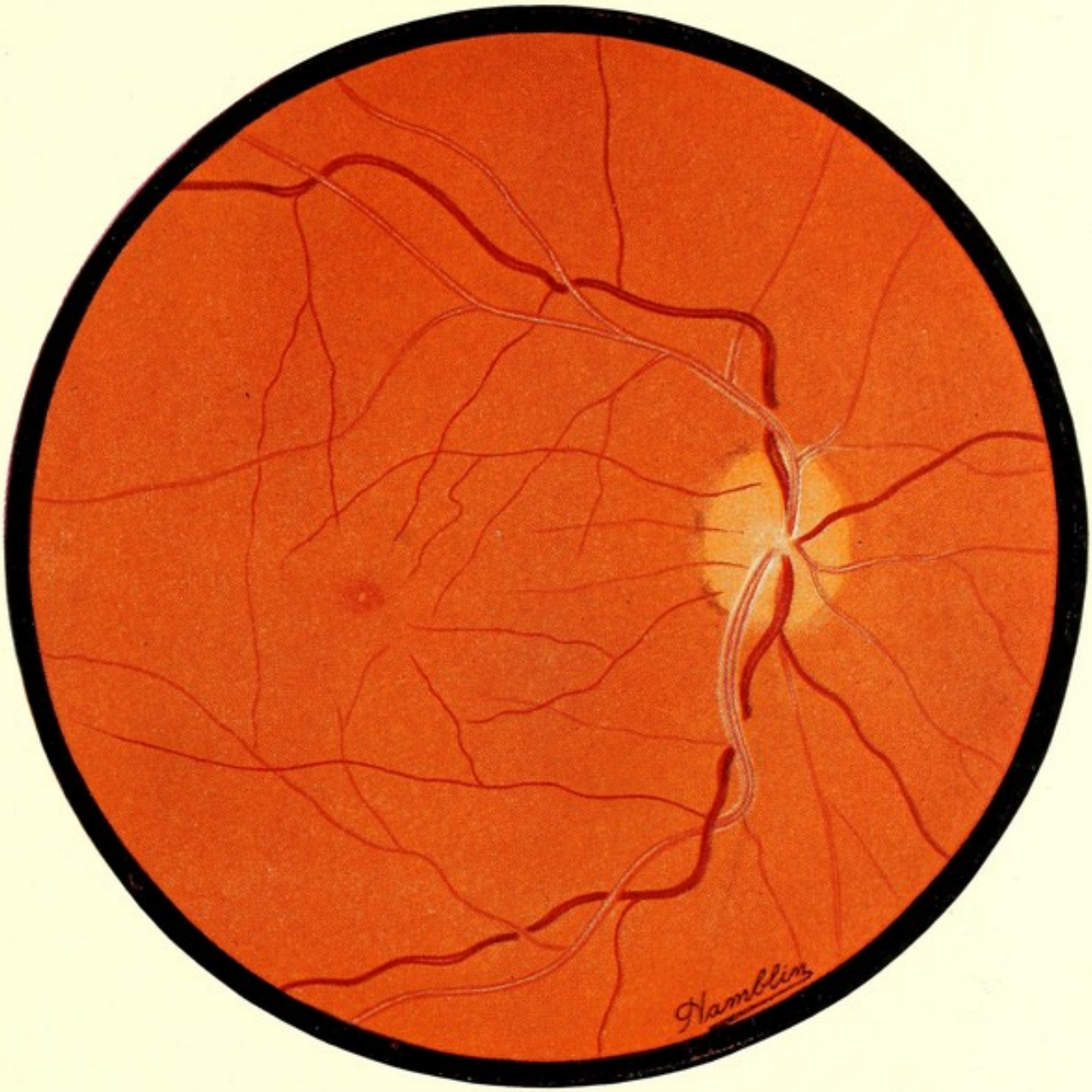
In these cases the disc may appear normal and the haemorrhages and exudates may be situated at the periphery.



23. RETINITIS AND ARTERIO-SCLEROSIS (ADVANCED)

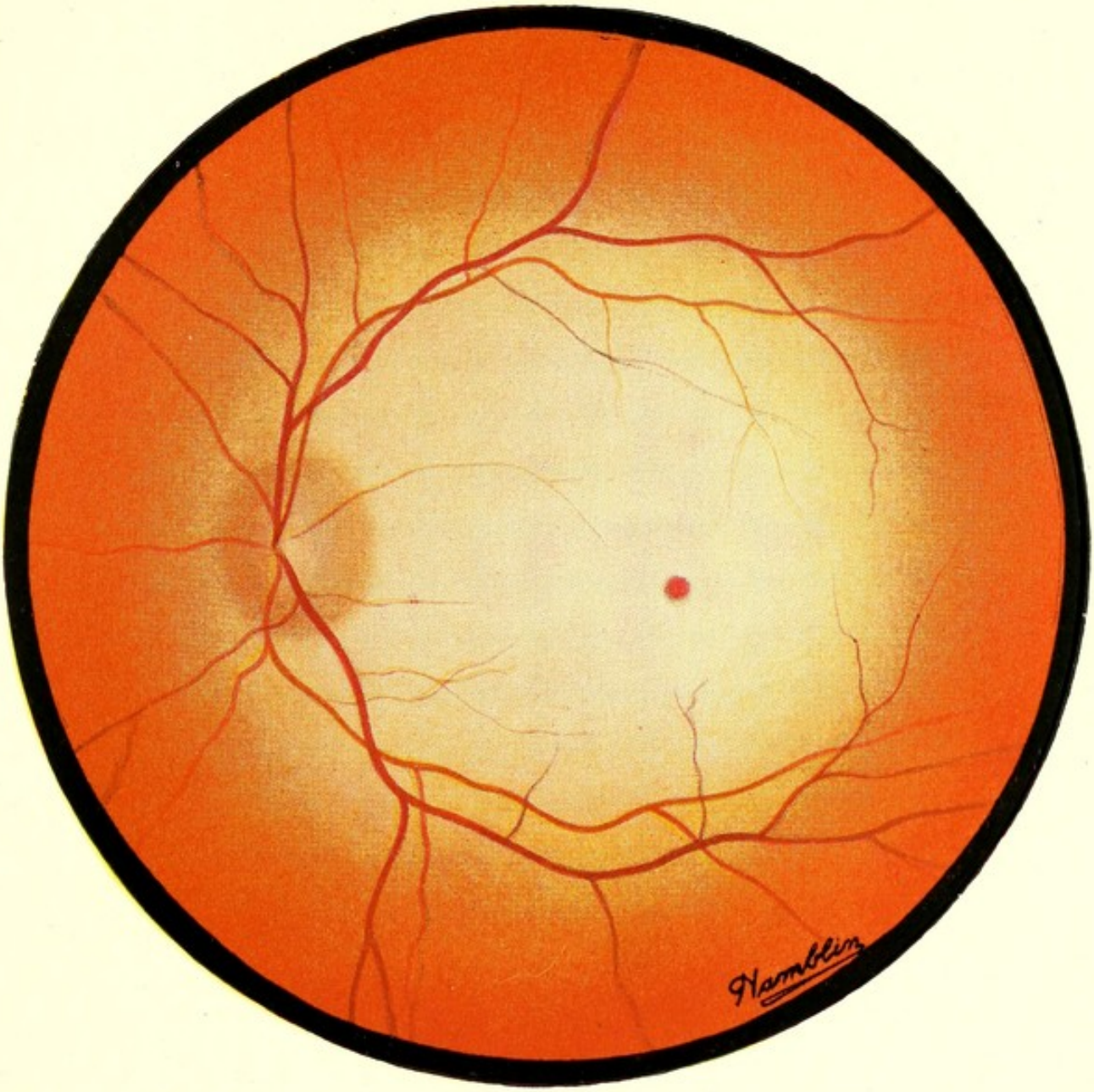
SOME of the arteries completely closed and seen as white threads.

Veins at points of arterial crossings are crushed and deflected.



24. ARTERIO-SCLEROSIS

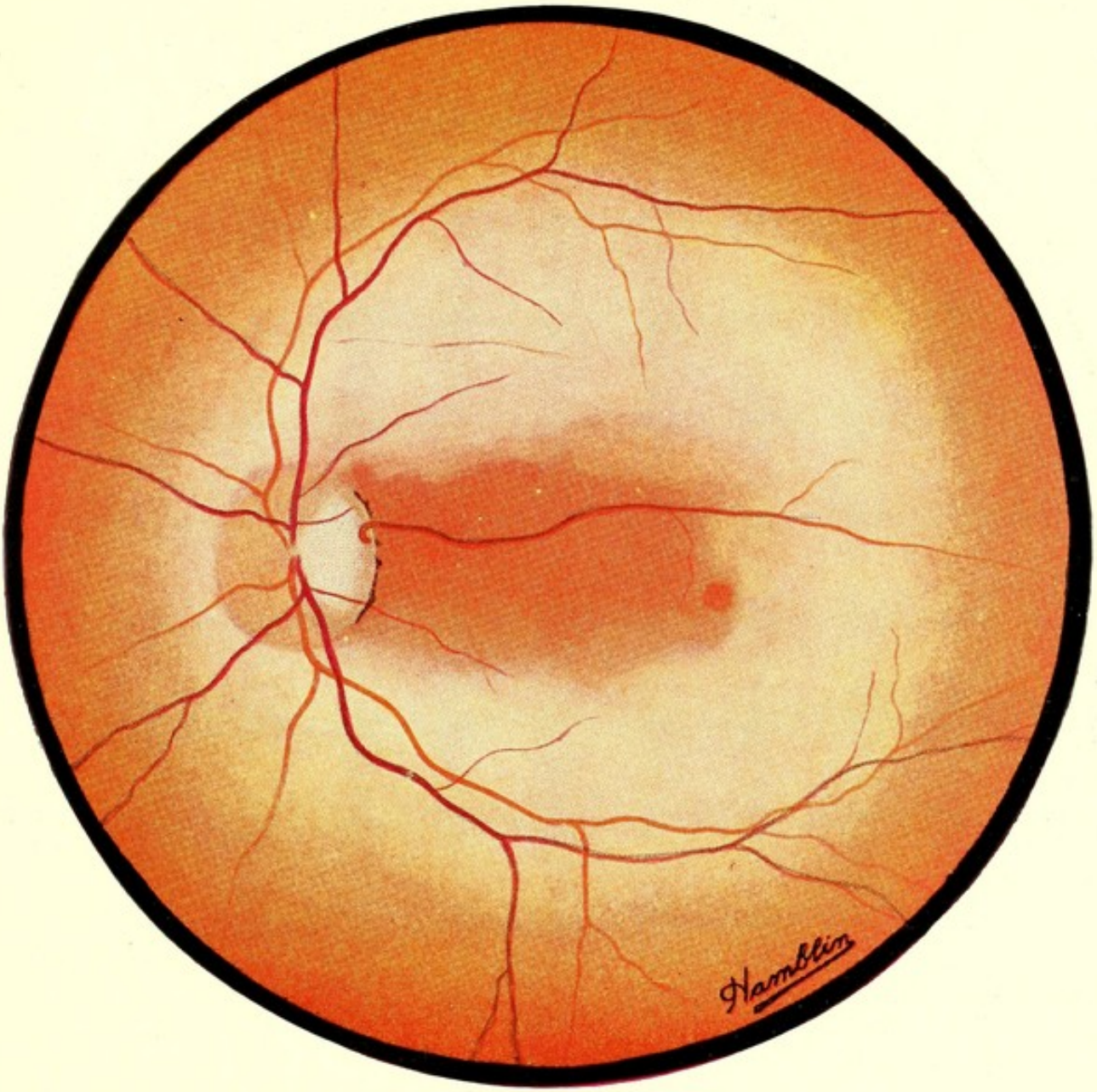
THE branches of the artery leaving the disc have their walls considerably thickened. The terminal branches are reduced in size. Note the breadth of the arteries as they cross the veins and how the blood-stream in the veins is obstructed by the rigid arteries.



25. EMBOLISM OR THROMBOSIS OF THE CENTRAL ARTERY OF THE RETINA

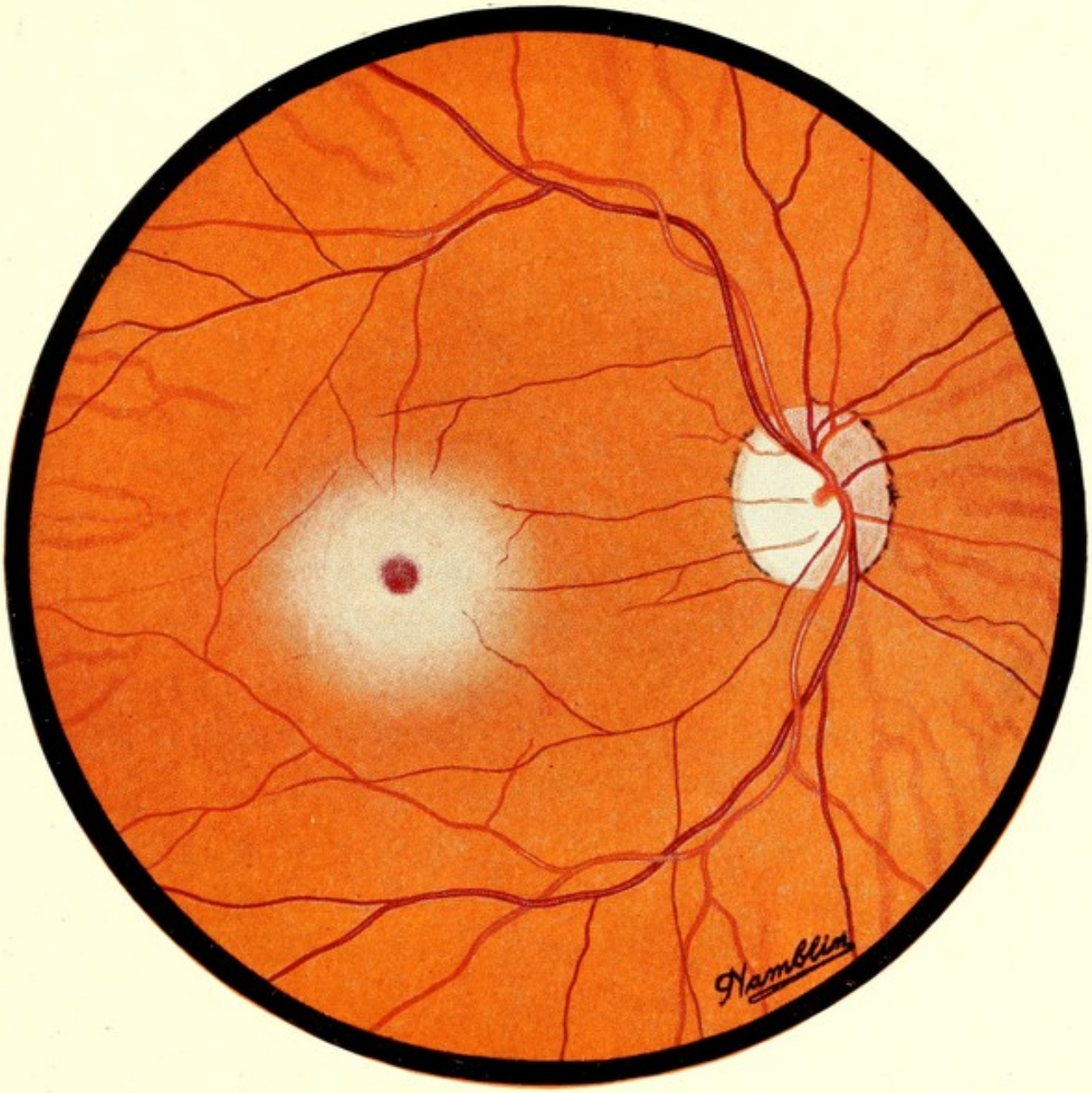
Disc rather blurred.

The fovea shows as a cherry-red spot in the bloodless area.



26. EMBOLISM OF THE CENTRAL ARTERY OF THE RETINA

MODIFIED by a cilio-retinal vessel.



27. TAY-SACHS DISEASE

The fovea shows up as a cherry-red spot in the atrophied area at the macula. Compare with Plate 25 'Obstruction of the Central Artery' (where the *whole* of the posterior pole of the eye is bloodless).

Note the whiteness of the disc on the temporal side, indicating atrophy of the macular nerve fibres.

28. THROMBOSIS OF THE CENTRAL VEIN OF THE RETINA

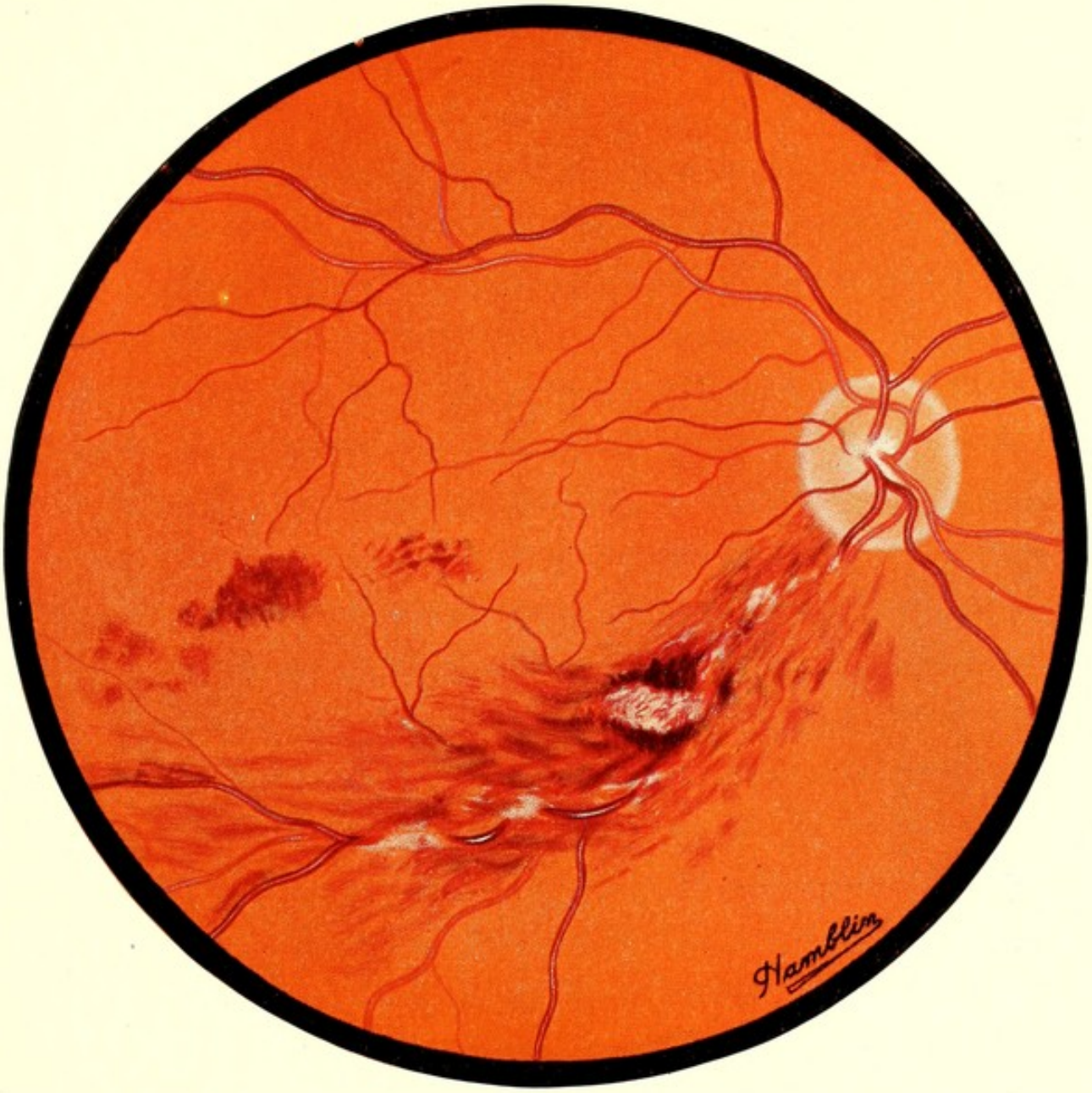
VEINS engorged, tortuous and in places obscured by exudate.

Numerous flame-shaped haemorrhages (in the nerve-fibre layer) and some larger, deeper haemorrhages.

The arteries are not generally obscured as in the next picture (Plate 29).

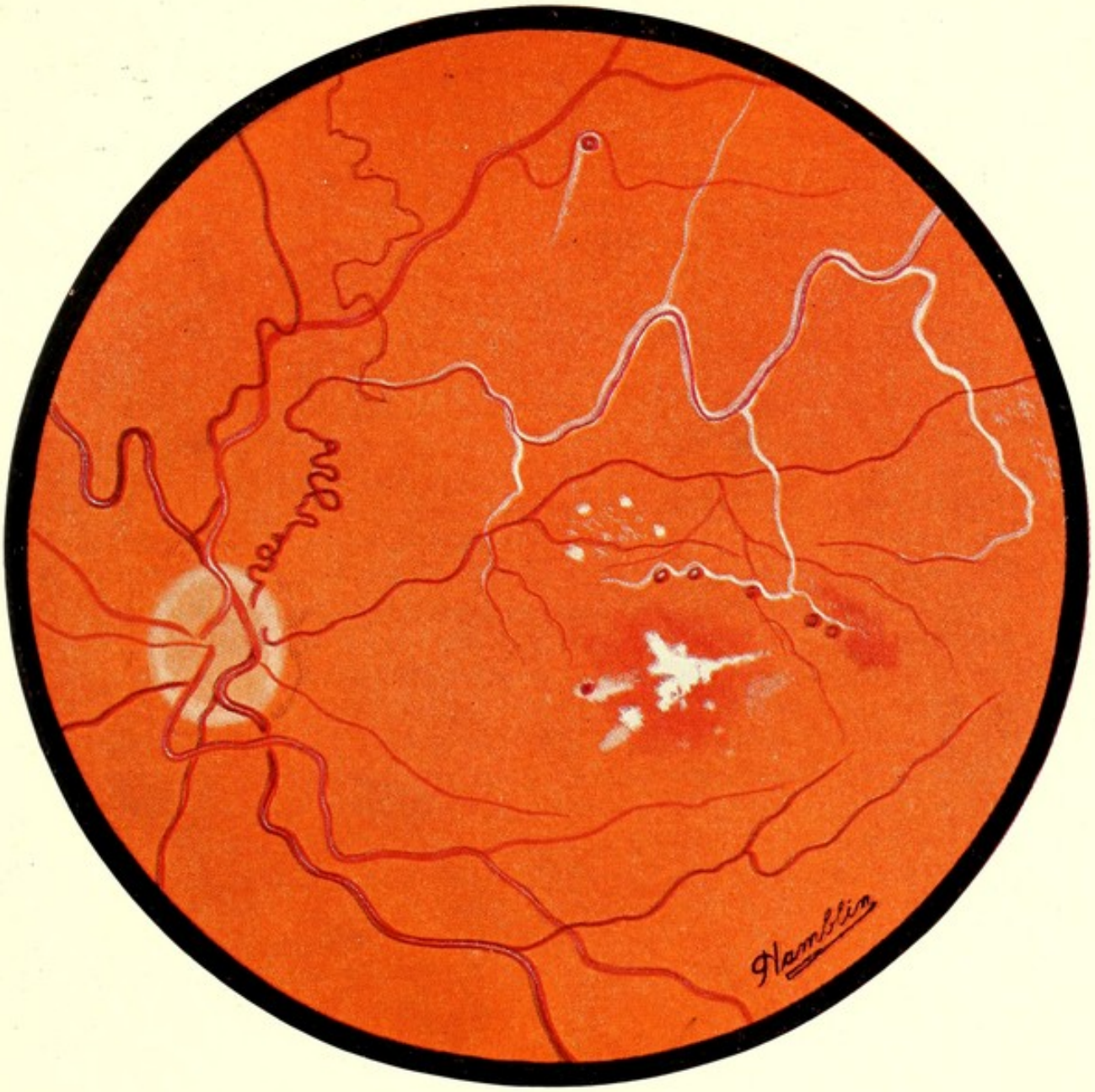
29. THROMBOSIS OF THE CENTRAL RETINAL VEIN

Veins engorged and tortuous—arteries obscured. The whole fundus covered with haemorrhages.



30. THROMBOSIS OF THE INFERIOR TEMPORAL VEIN

The changes are limited to the area of the obstructed vein.



31. EMBOLISM OF SMALL VESSELS

WITH ARTERIO-SCLEROSIS

VEINS very tortuous.

Note particularly changes at points where arteries and veins are in contact.

32. RETINITIS PROLIFERANS

THICK white curved bands of connective tissue, projecting forward into the vitreous, and being in focus, the fundus appears blurred because out of focus.

33. RETINITIS CIRCINATA

SMALL patches of exudate accompanied mostly by pigment are deposited in the characteristic crescentic shape.

The retinal vessels are seen passing unchanged over the patches. Pigmentary changes at the macula.

The sequela of haemorrhages or exudative retinitis.

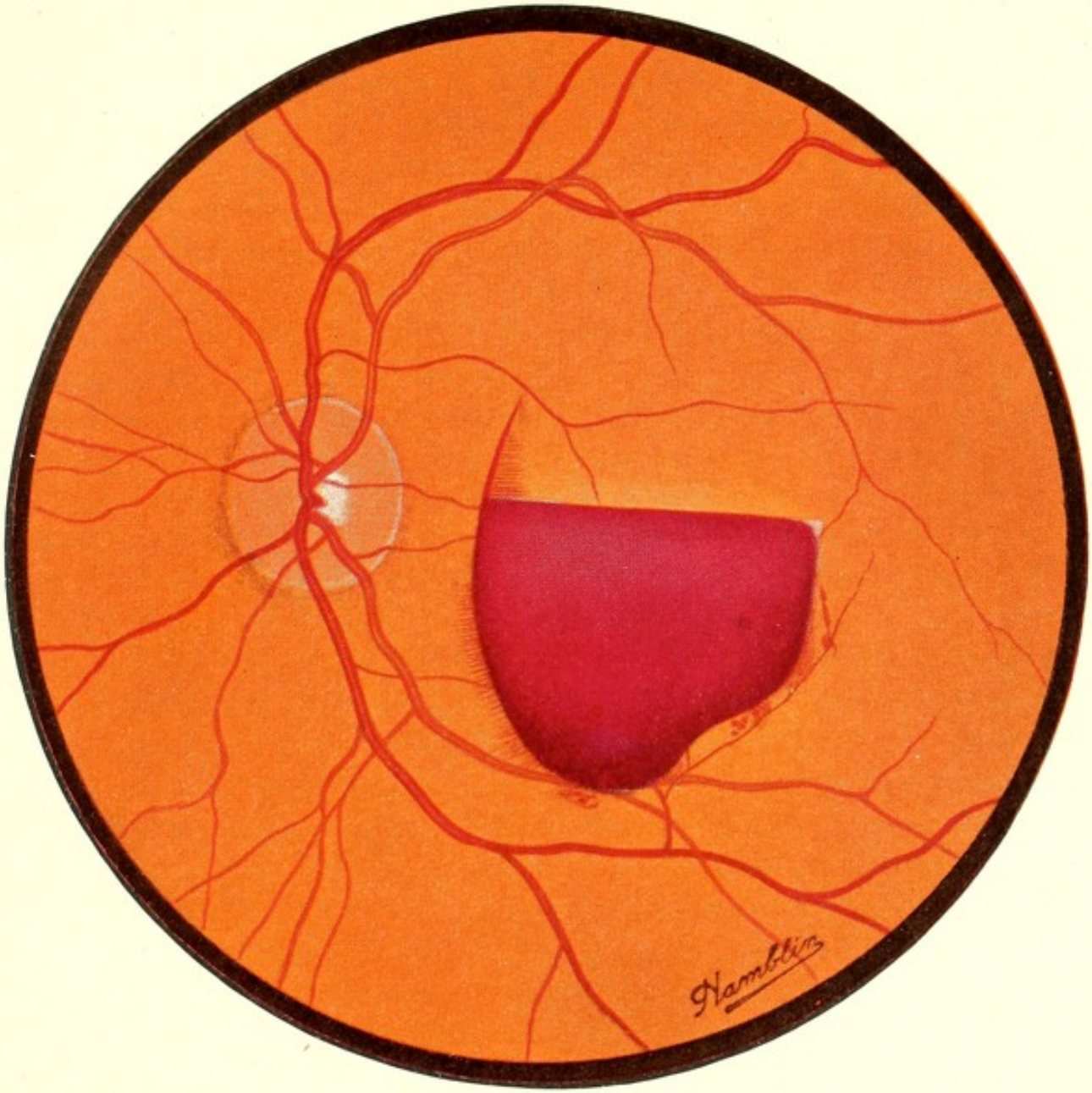
34. DETACHMENT OF THE RETINA

The detached retina is thrown into irregular folds. Compare this with Plate 47.

The picture beyond the detachment is blurred because it is out of focus.

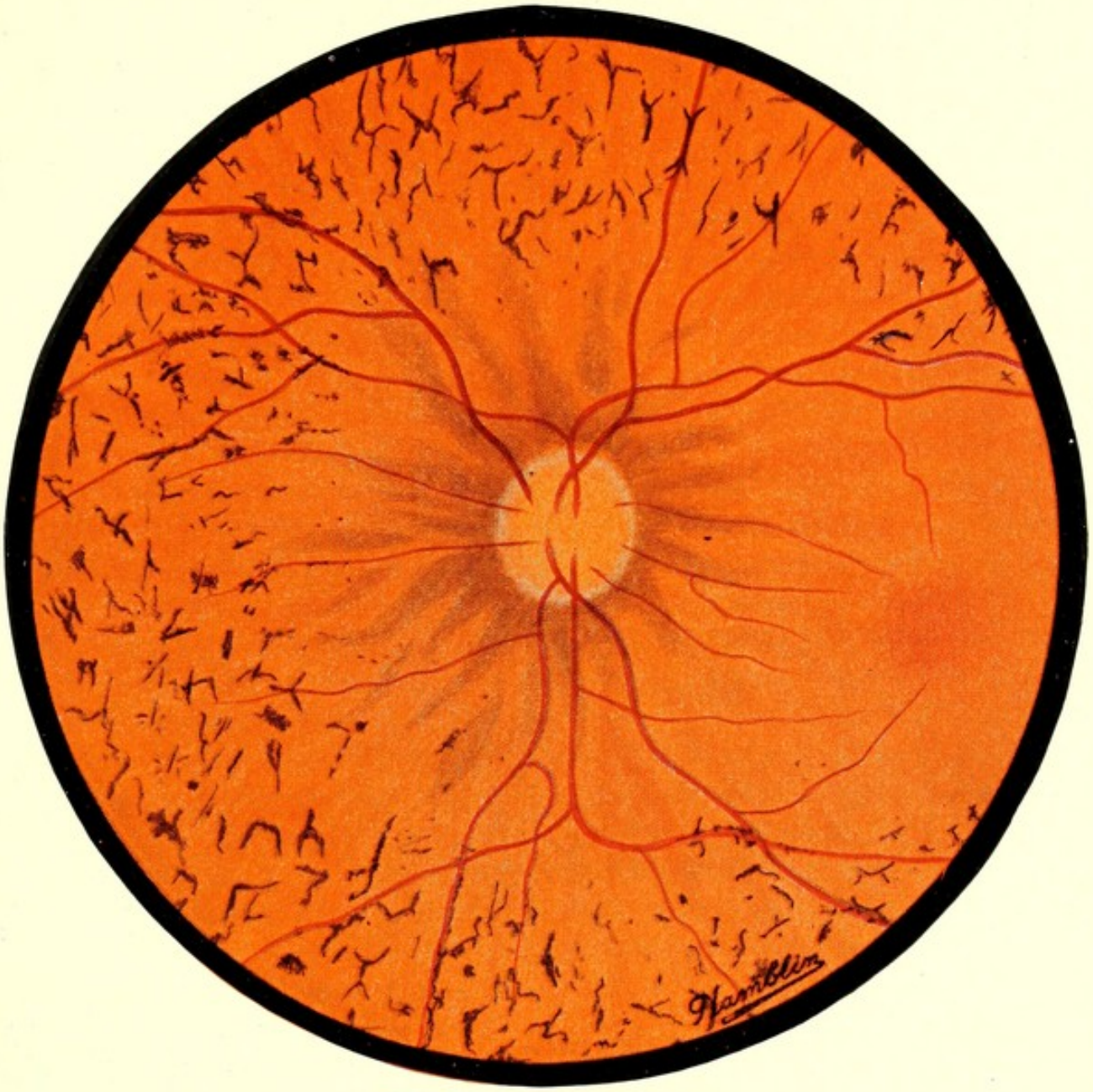
35. RETINAL CHANGES IN LEUKAEMIA

Retinitis with haemorrhages and exudates. Considerable oedema near the disc. Veins dilated, with white lines.



36. SUBHYALOID OR PRE-RETINAL HAEMORRHAGE

AN effusion of blood from the retina between the latter membrane and the vitreous.



37. 'RETINITIS PIGMENTOSA' (EARLY STAGE)

VESSELS diminished in size. Characteristic deposit of 'bone-corpuscle'-shaped pigment at the periphery.

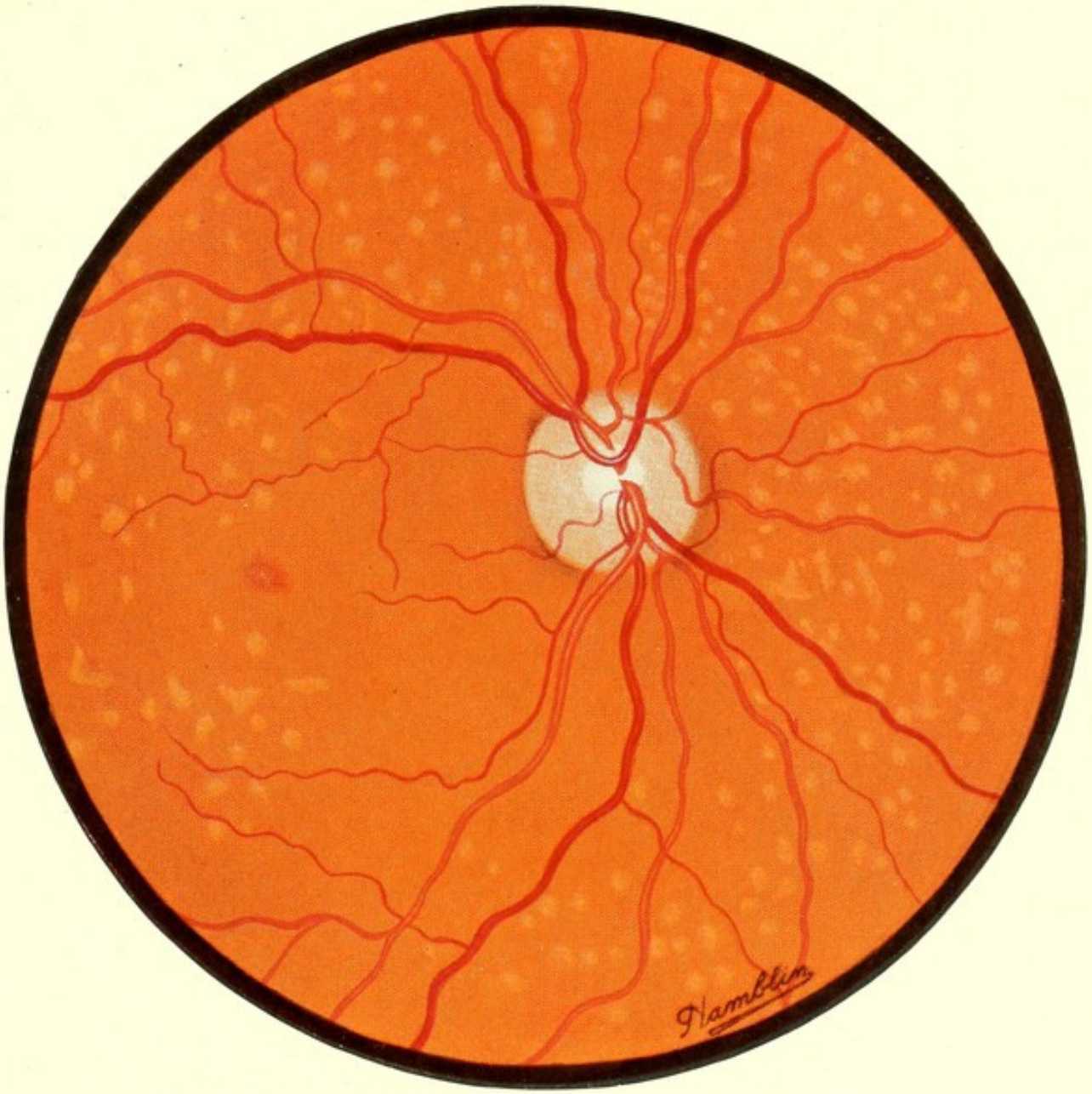
This migrated pigment is quite superficial and is seen to lie *on* the vessels.

It is a degeneration of the retina, and is a congenital and familial disease.

38. 'RETINITIS PIGMENTOSA' (ADVANCED STAGE)

ATROPHY of the retina and choroid. Disc has waxy appearance.

Vessels reduced in size.

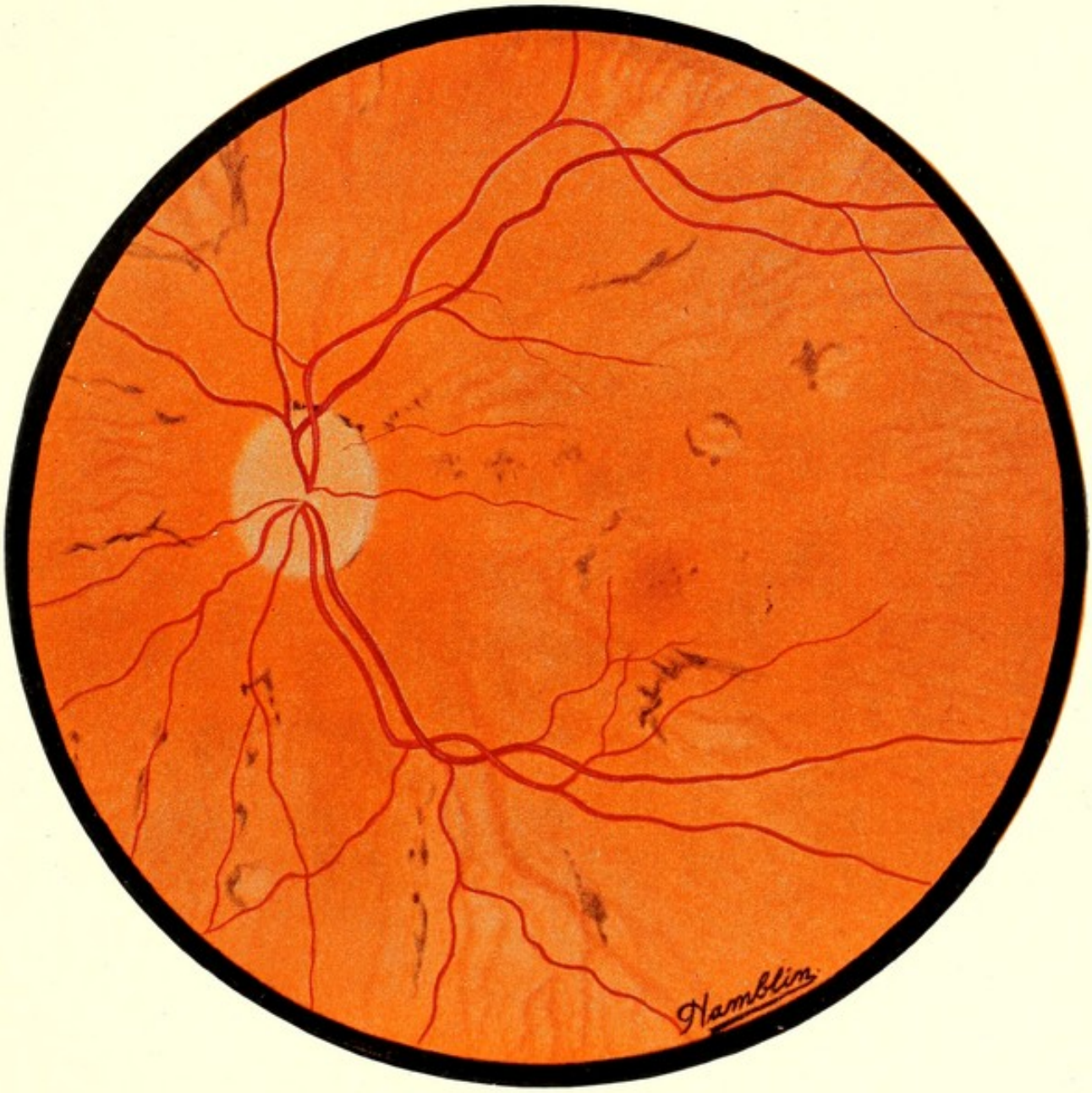


39. GUTTATE CHOROIDITIS (TAY'S)

The spots are 'colloid' bodies—hyaline excrescences—on the choroid.

They are most commonly found only in the macular area—are stationary and rarely interfere with vision.

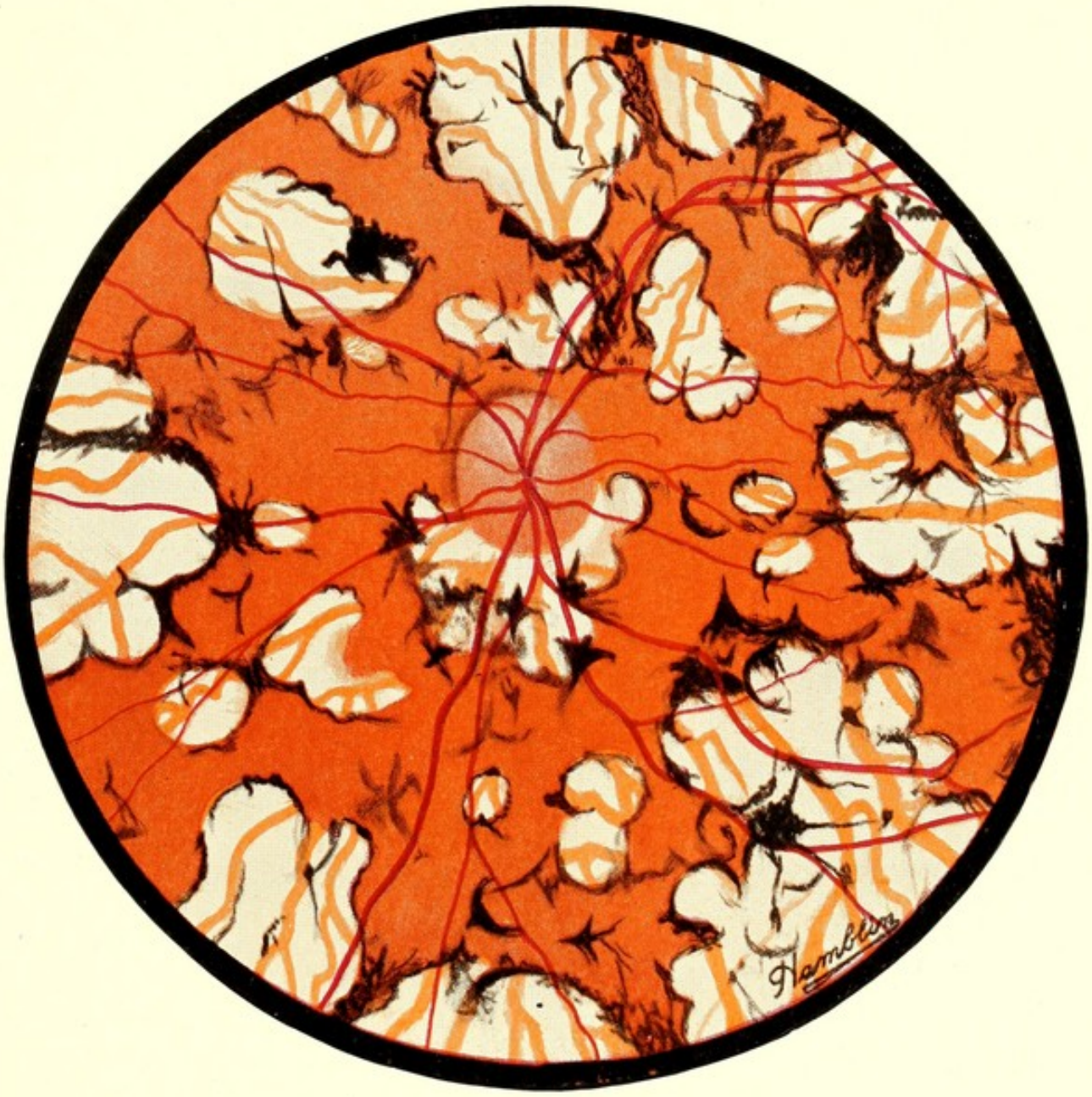
They vary very much in size and may be much smaller than the above.



40. CHOROIDITIS DISSEMINATA (EARLY STAGE)

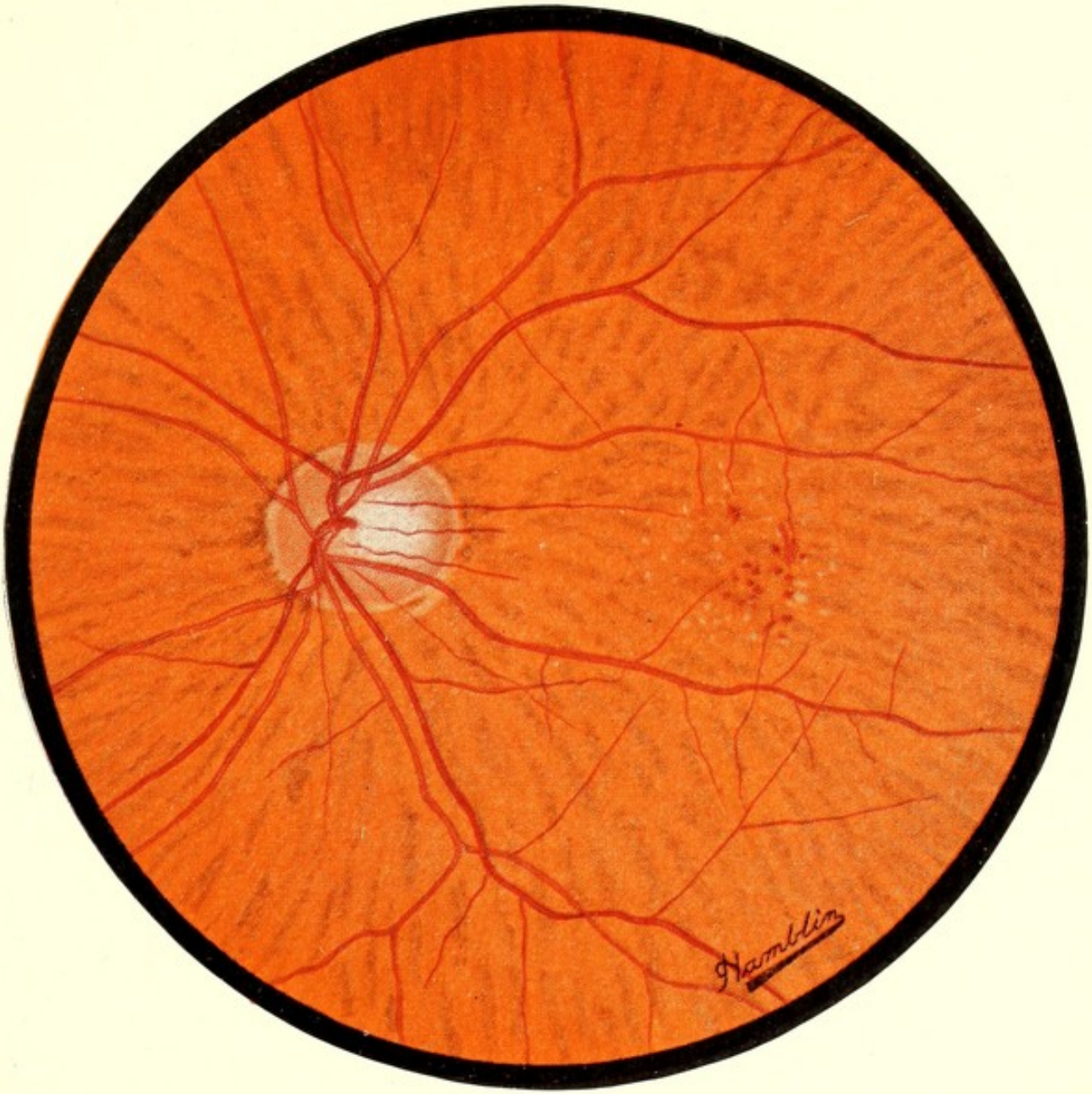
THE pigment is lying *under* the vessels.

Compare with Plate 37. 'Retinitis Pigmentosa'.



41. CHOROIDITIS DISSEMINATA (LATE STAGE)

LARGE areas of atrophied choroid with retinal pigment heaped up round their margins. The retinal vessels pass unchanged over them.



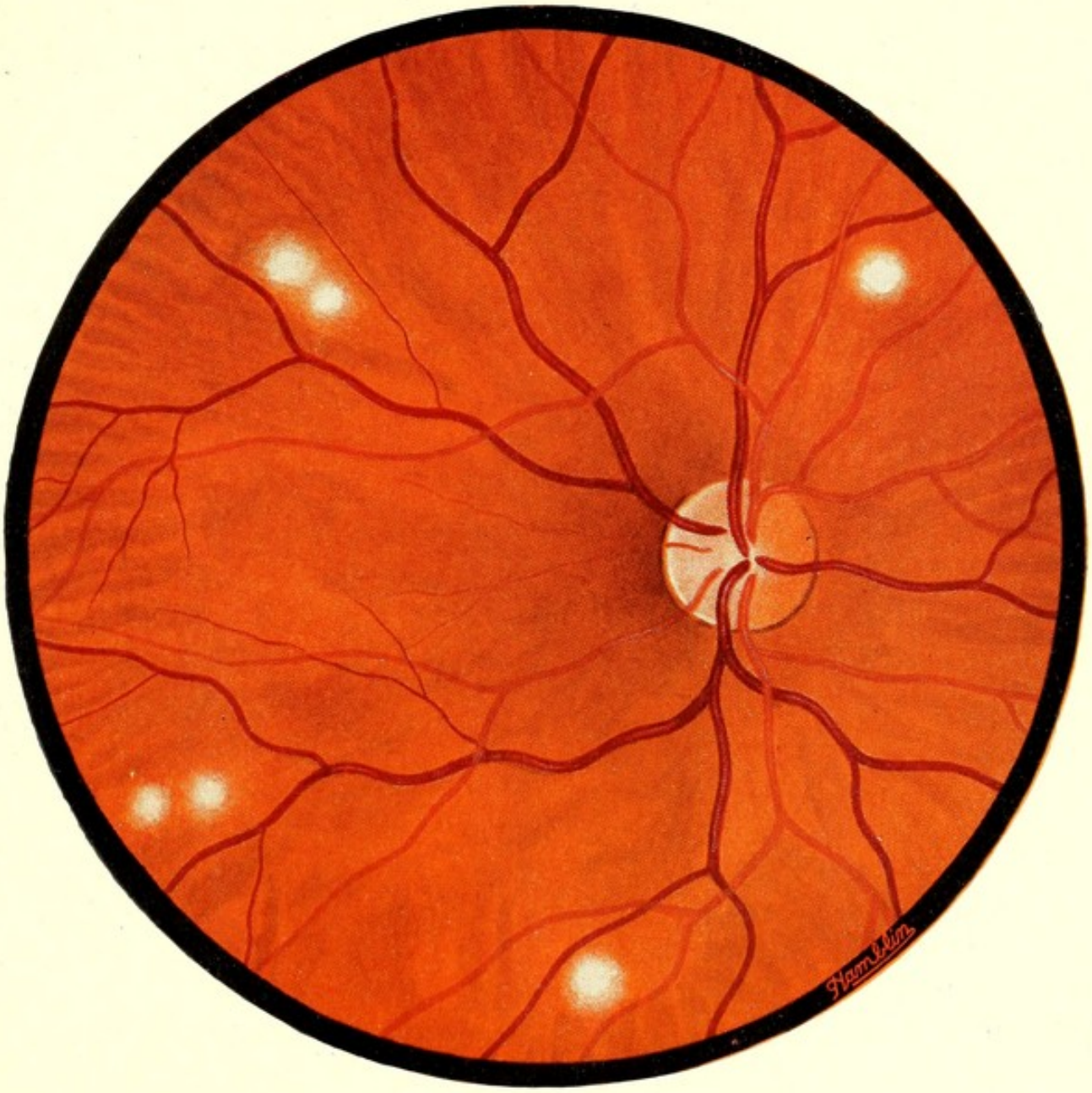
42. CENTRAL SENILE CHOROIDITIS

THE choroidal pigment is plainly seen over the whole fundus.

The inflammation of the choroid at the macula has spread forward to the retina, and pin-point haemorrhages are seen.

There is a small physiological cup.

The patient was 80 years of age and vision was only $\frac{6}{60}$.



43. TUBERCLE OF THE CHOROID

SOLITARY tubercles. When these disappear an atrophic patch is left, generally surrounded by a ring of pigment.

44. SYPHILITIC RETINO-CHOROIDITIS

The whole surface is peppered with pigment. The disc is abnormally white.

At the periphery on the temporal side, the choroid is considerably atrophied.

45. SYPHILITIC CHOROIDITIS

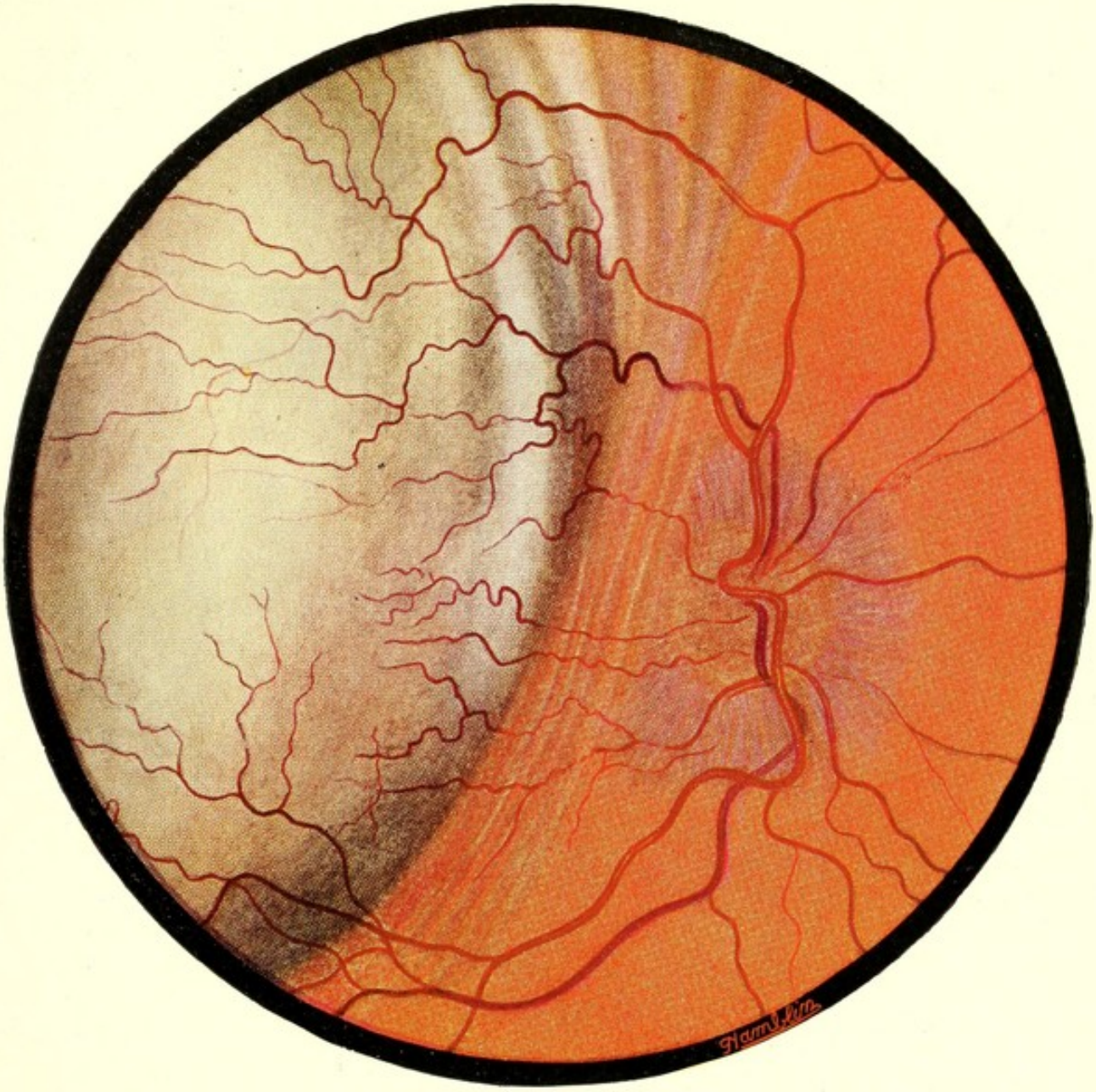
WITH 'DRUSEN' BODIES

THESE are hyaline or colloid bodies deposited in this peculiar form, a sequel of choroiditis.

46. SCLEROSIS OF THE CHOROIDAL VESSELS

The changes in the choroidal vessels are most marked at the posterior pole and disappear towards the periphery.

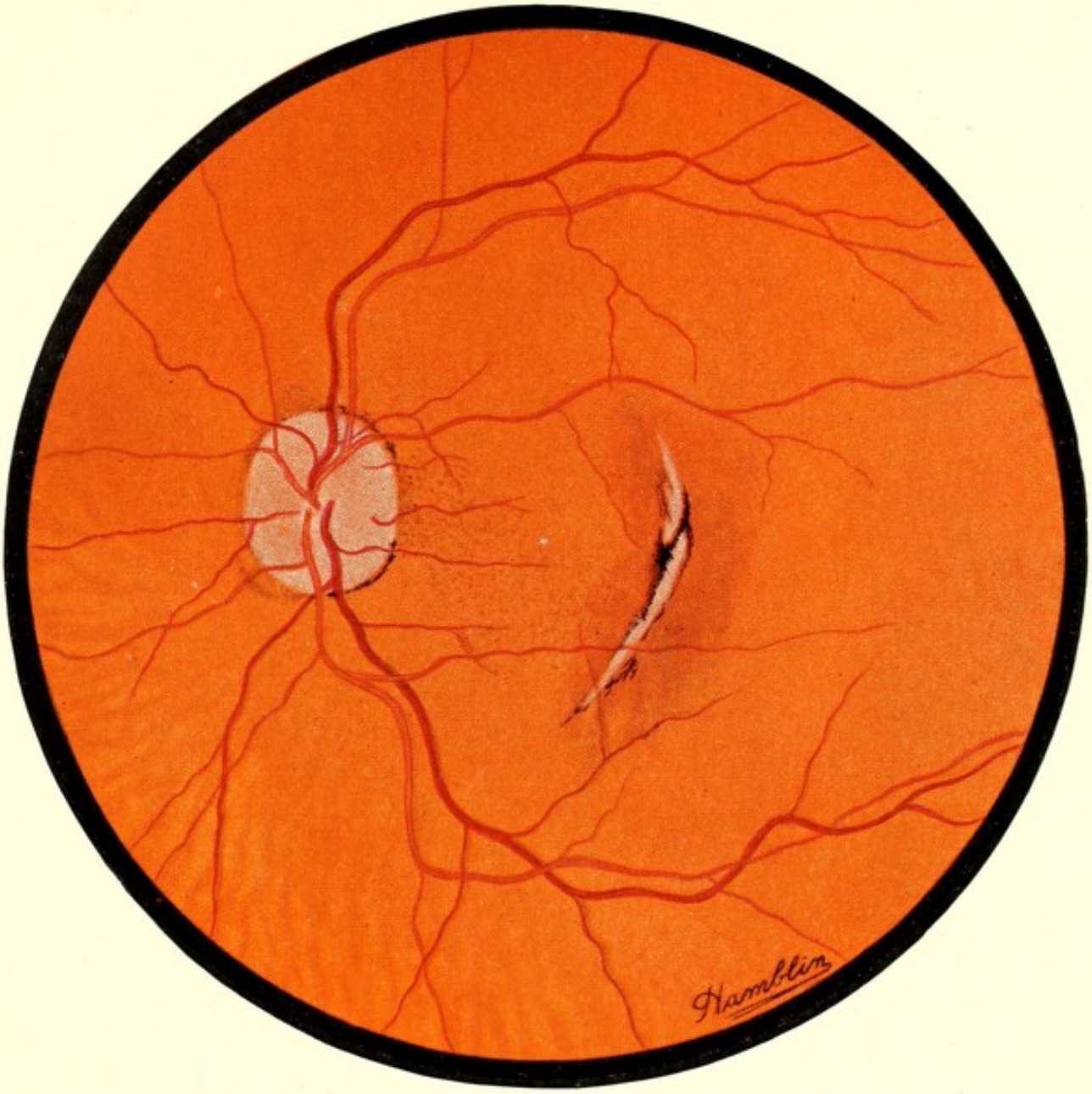
The retinal vessels are normal.



47. SARCOMA OF THE CHOROID

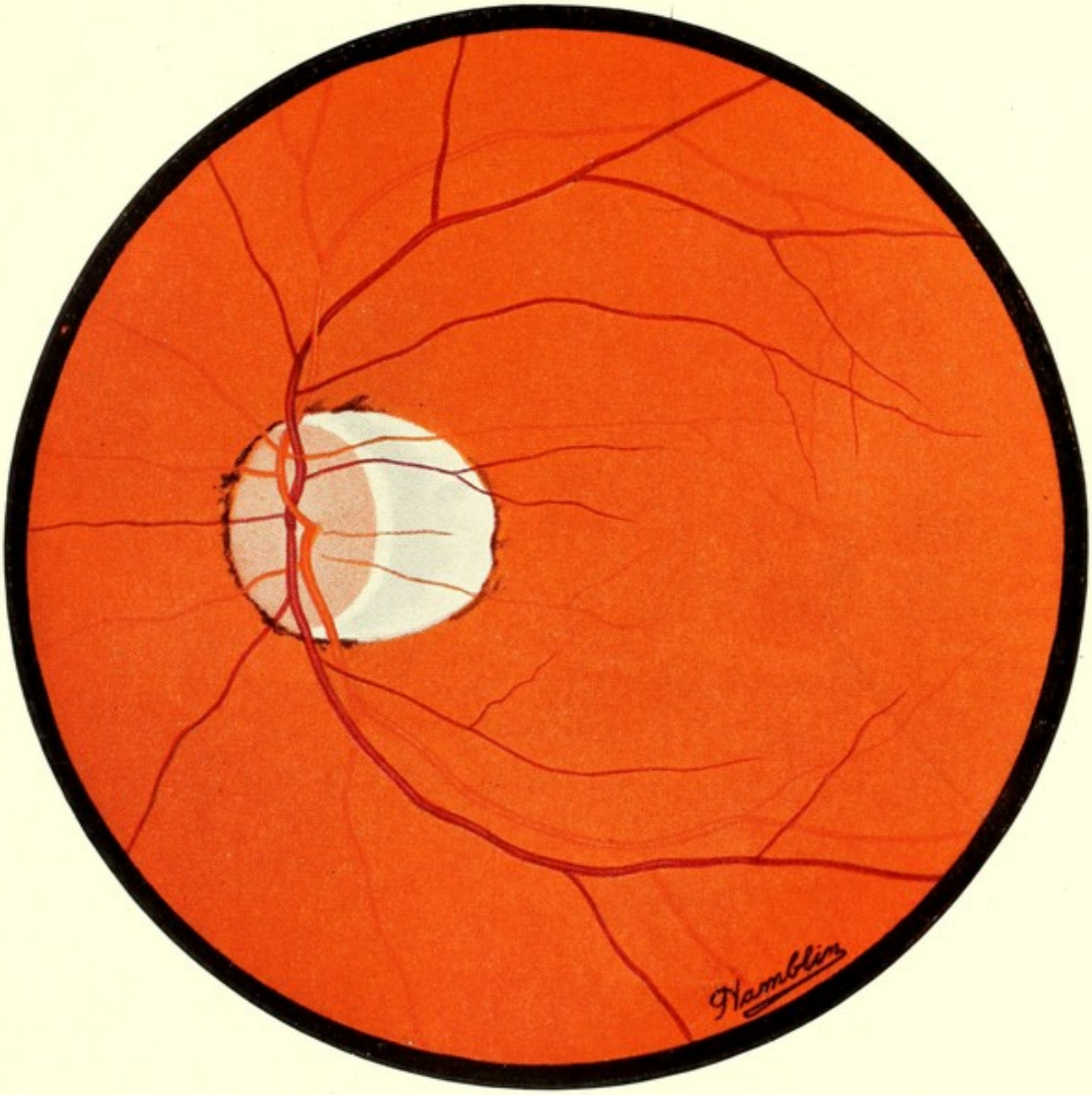
THE tumour is projecting forwards and the retina is stretched over it. Compare with Plate 34 'Retinal Detachment'.

Note absence of folds over most of the detached retina, only present at margin of tumour.



48. RUPTURE OF THE CHOROID

The crescentic shape of the scar is characteristic. Retinal vessels are seen passing over it undisturbed.



49. MYOPIC CRESCENT

Atrophy of the choroid on the temporal side of the disc due to lengthening of the eye in myopia and consequent stretching of the tunics.

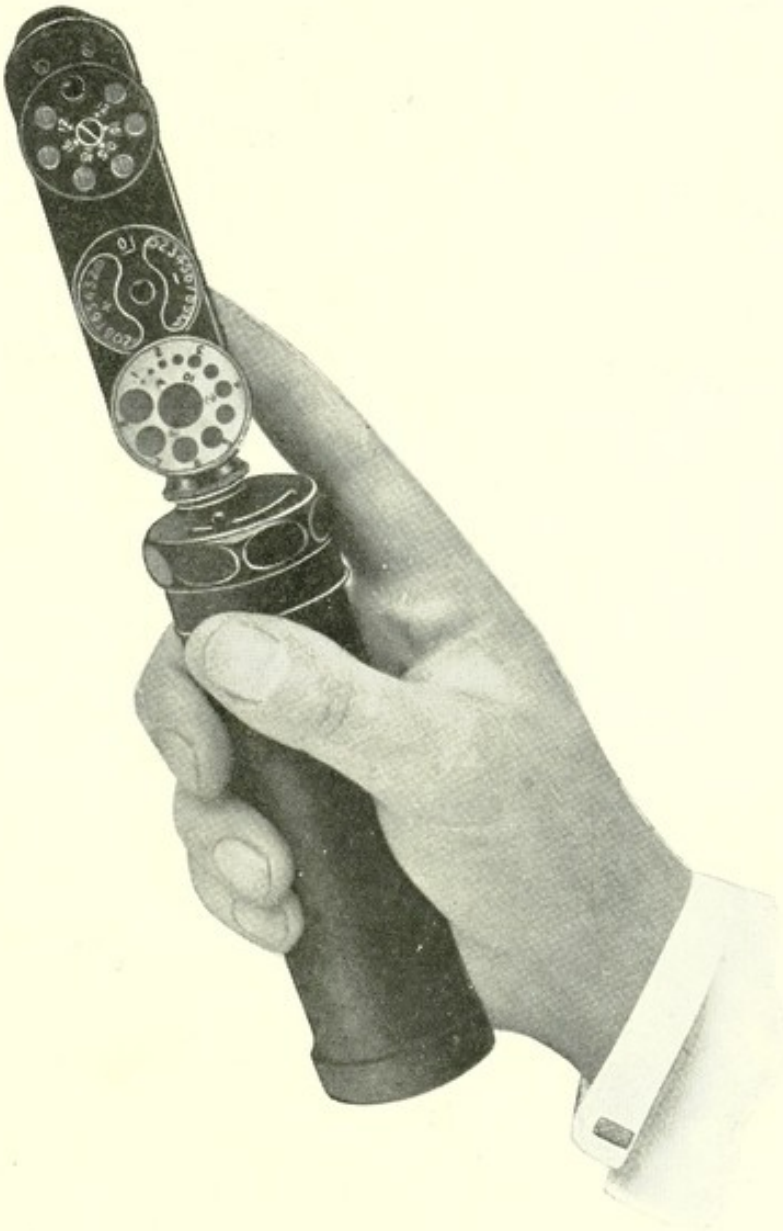
It may be smaller, or larger, and may surround the disc. See next plate.

50. CHANGES IN HIGH MYOPIA

Not only is the choroidal atrophy very extensive, but there are also choroiditis and changes at the macula.

THE LISTER-MORTON OPHTHALMOSCOPE

No. 495



It is generally acknowledged, not only by Ophthalmic Surgeons, but also by Physicians who have used the Lister Morton Ophthalmoscope that in this instrument a high level of perfection has been reached, both in regard to construction and illumination. Its greatest asset to the Physician is **the ease with which it enables him to obtain a clear view of the fundus.** So easy is this Ophthalmoscope to use that even a layman,

without previous experience of such an instrument, can see a fundus with it. In the hands of a Physician it is an asset as a labour-saving device. The view of the fundus obtained by the Lister Morton Ophthalmoscope even in a fully lighted room is incomparably superior to any previous instrument in point of diminished corneal reflex, absence of general glare, and large field, brilliantly and evenly illuminated. Besides being a most efficient Ophthalmoscope it may also be used (as shewn on the following page) for transillumination of the nasal sinuses. While marking an entirely new departure in the construction of Ophthalmoscopes it embodies the advantages of Hamblin's former models. The head is set eccentrically on the handle bringing the driving wheel into a more convenient position for easy operation. The same arrangement renders the handle of the instrument and the operator's hand less likely to come into contact with the patient. The head of the instrument is keyed to the handle so that it cannot turn when pressure is applied to the driving wheel. A compact and efficient rheostat is contained in the handle by means of which any degree of illumination is readily obtained. The rheostat, focussing collar, and driving wheel are all easily controlled by the index finger without loosening the grip. The octagonal shape of the cap at the head of the handle effectually prevents the instrument rolling when laid down. The handle is instantly detachable.

The whole is contained in a compact case, provision being made for a spare lamp.

Price, complete with case (with one spare lamp) **£12 12 0**

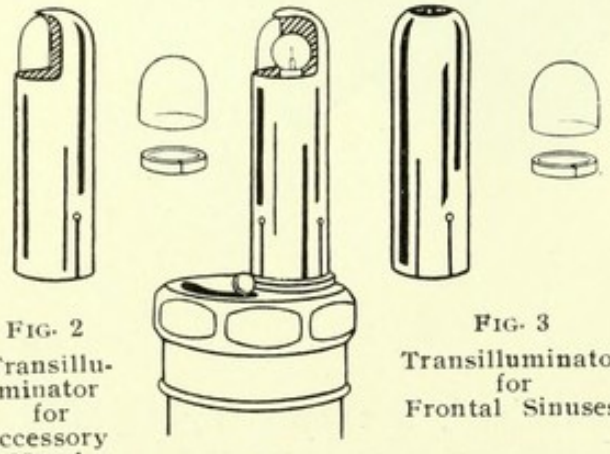


FIG. 2
Transilluminator for accessory Nasal Sinuses.

Transilluminator fitted on handle of Ophthalmoscope.

FIG. 3
Transilluminator for Frontal Sinuses.

Sinus or Frontal Transilluminators, each .. **5/-**

Spare glass domes, each .. **6d.**

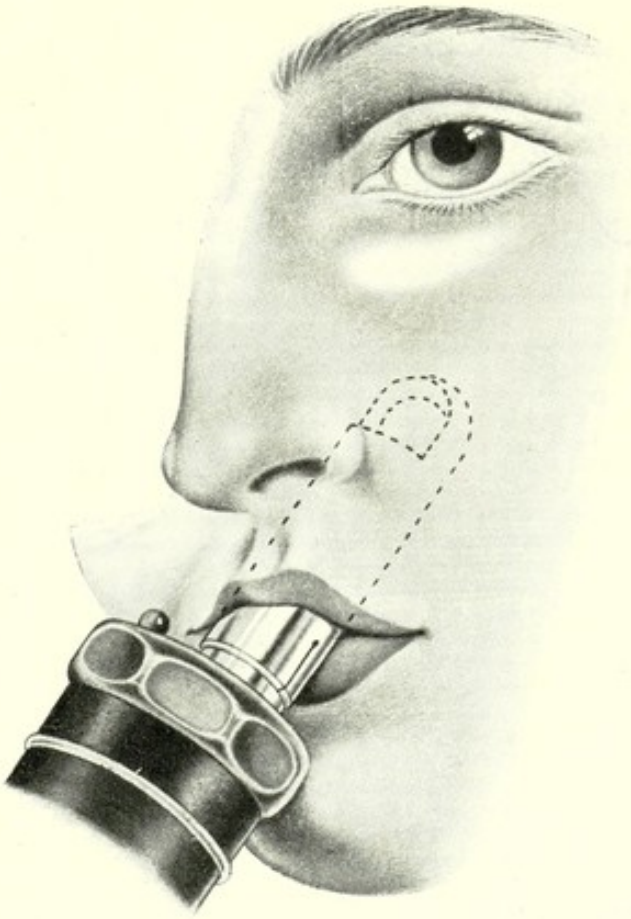
Spare lamps, each .. **4/6**

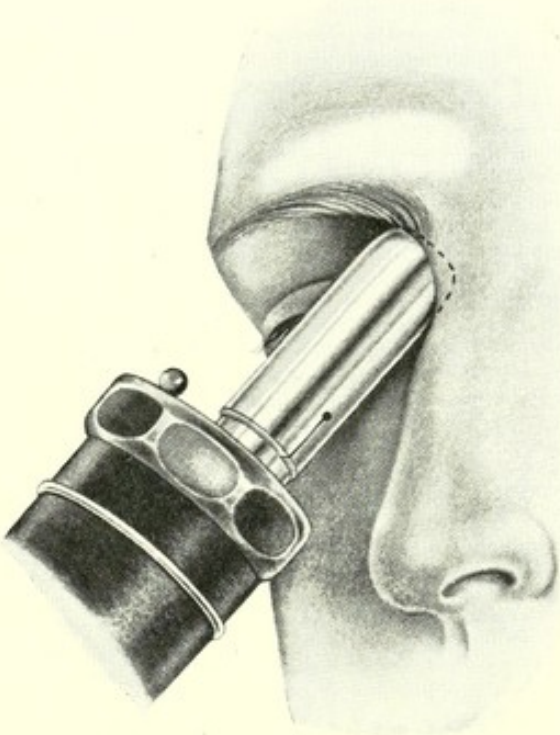
Spare batteries, each .. **7d.**

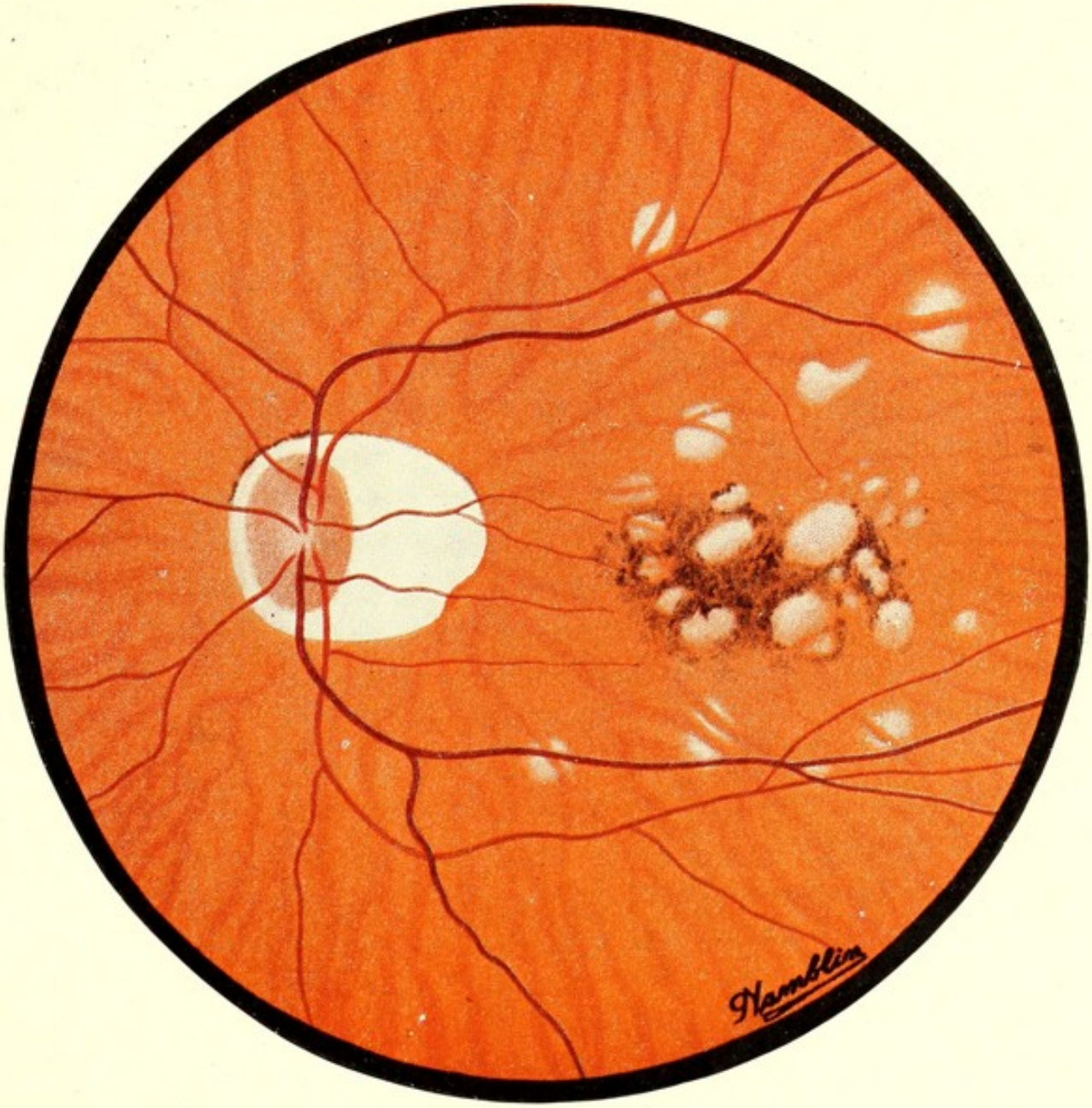
Theodore Hamblin, Ltd. manufacture a great variety of Luminous Ophthalmoscopes at prices ranging from **£3 10 0**. Illustrated Price List on application.

TRANSILLUMINATION OF THE NASAL ACCESSORY SINUSES AND FRONTAL SINUSES.

By removing the head and condensing cap of the Ophthalmoscope the instrument can be adapted for transillumination of the nasal accessory sinuses and frontal sinuses. The first illustration on this page shews the transillumination of the left nasal accessory sinus. The drawing is diagramatic to shew the direction and position of the apparatus in the mouth. The second illustration shews the transillumination of the right frontal sinus. Both fittings give really efficient transillumination and greatly enhance the value of the Ophthalmoscope to the Physician. As will be seen in the smaller illustrations on the opposite page these transilluminators can be easily sterilized. The glass dome is held in position by means of a ring sliding inside the tube, and is readily removed in case of breakage or for purposes of sterilization.







51. HIGH MYOPIA WITH CHOROIDITIS

The retinal vessels are seen passing over the patches of choroidal atrophy.