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# Ophthalmoscopic Examination

Of Sixty Insane Patients in the State Asylum at Utica.

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# Ophthalmoscopic Examination

OF SIXTY INSANE PATIENTS IN THE STATE  
ASYLUM AT UTICA.

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By the request of Dr. Gray, I examined with the ophthalmoscope 60 patients taken from the wards of the asylum. Of the nature of their diseases I was quite ignorant, and often did not know whether the persons examined were insane. I had no preconceived notions of what lesions to expect, and simply described in brief notes the appearances which I saw. In most cases the pupils were dilated with atropia, and in almost all cases the examination was made by the upright image. Minute retinal changes can only be seen by this method, and the region of the yellow spot can be well seen only with dilated pupil. I am in the habit of looking with relaxed accommodation, and only require such a corrective glass as the patient's refraction may demand. When any glass is needed, the fact is stated in the notes.

I have endeavored to describe the facts just as they were, and have inserted statements which are not important to the question of diagnosis, viz: the existence of physiological excavation, the accidental pigmentation of the choroidal border of the disc and other points which an ophthalmoscopist would at once know to belong to the variations consistent with health.

In the retina I speak in many cases of the occurrence of minute specks sometimes called pin points—usually found near the yellow spot. They may be in it, directly around it, or between it and the nerve. They are so

fine as only to be seen with the greater magnifying power of the upright image. They are bright in color, whitish or yellowish, but are not the lesions seen in retinitis from Bright's disease, nor in any recognized disease. I have seen the same specks in other eyes, and have not found that they produce any impairment of sight; but I can not assert that they are not precursors of lesions which may injure sight. They certainly appear most often in states of retinal congestion, and they are found in cases of asthenopia. If they are to have any value attached to them, it would be that they indicate hyperæmia. The advancement of the small vessels nearer than normal to the macula, is an undoubted sign of hyperæmia. So, too, striation of the edge of the optic nerve and of the adjacent retina is due to œdema of the tissue. But I do not forget that there is striation which is wholly physiological, even when not amounting to the degree recognized as due to opaque or double outlined nerve fibres (*markhaltige nervfasern.*) In most cases the striation described is of the pathological variety. As to hyperæmia of the nerve, I am quite aware of the great differences which characterize the healthy state of the nerve in different persons, and I am accustomed to look quite as much for change in transparency and texture as for modification in hue. The significance to be given to pulsation of the veins upon the disc is yet a moot question. It has been regarded as a sign of arterial and intra ocular tension. It habitually occurs with quickening of the respiration, and that may have induced it in some of the timid and excitable patients. It has been taken as a sign of cerebral anemia, and made much of in epileptic cases to determine the vascular state of the brain. We are not yet clear on this subject.

The number of cases which are here tabulated are

wholly insufficient for a basis of general deductions. These are but a handful to what must be collected before such generalizations can be made. I have not, however, hesitated to point out facts which appear, on scrutiny of the cases, to be noteworthy. Small though the material is, it may do something to help us understand better a most intricate subject. For an account of similar cases, I would refer to Allbutt's recent work on the ophthalmoscope in brain disease.

### GENERAL PARESIS, 11 cases.

In all these cases, with the exception of two, there is hyperæmia and infiltration of the nerve and retina. The striation of the retina, near the nerve, is often extremely pronounced, and may render the edge of the nerve hazy and indistinct. The nerve is often opaque in texture, or may be of a slaty hue. In one instance (5,) the nerve is found pallid, and doubt is expressed whether this may not correctly be called a sign of atrophy. It would not be easy to decide the point without testing the sharpness of sight, which was not done. The hue of the opposite nerve and its ill-defined edge would favor this opinion, because its congestion would be likely to issue in just such pallor as is described in the left eye. Case 11 also presents these tokens, as if it were now in a secondary stage following congestion. The uniformity in the aspect of the fundus oculi was so considerable that I soon learned to suspect from ophthalmoscopic appearances what was the nature of the patient's malady. I am not to be understood as saying, that I could thus diagnosticate general paresis. But the value of this observation will appear when, in inspecting other forms of brain disease, considerable discrepancies are noticed.

1. Man—Admitted August 8, 1871, aged 40. General Paresis, duration one year. (Used atropine to dilate pupil).

*Left eye*—Small choroidal atrophy, nasal side. Veins rather large. Arteries medium. In region of macula are minute specks, pin points, dusky red. Physiological excavation of disc.

*Right eye*—Similar. Venous pulsation distinct. Arteries and veins more equal in size. Pin points, specks about the macula. Retina yellowish.

2. Man—Admitted June 29, 1869, aged 35, married, good habits, demented. General Paresis, duration two years. (Used atropine.)

*Left eye*—Nerve oblong vertically, slightly pale and small, vessels on temporal side few. Veins large and tortuous. Arteries thin. Pulsation distinct. Striation in retina. No physiological excavation. Pin points visible at macula.

*Right eye*—Nerve more circular. Tissue clear. Veins large. Retina more transparent. Arteries small, some striation above and below. Entire edge of nerve pigmented. Pin points between nerve and macula distinct. Vessels nearly meet at macula.

3. Man—Admitted January 12, 1871, aged 55, married, good habits. General Paresis. Ill health. Duration nine months. (Used atropine.)

*Left eye*—Nerve transparent, hyperæmic. Vessels tortuous and very numerous. Retina œdematous. Striation decided in upper part of nerve, visible all round it.

*Right eye*—Same as left, except that there are pin points between disc and macula. Nerve hyperæmic. Striated around edge. Tissue transparent.

4. Man—Admitted April 10, 1871, aged 30, married, smokes. General Paresis. Demented. Duration four weeks. (Used atropine.)

*Left eye*—Deep hyperæmia of nerve, borders indistinct. Striated. Vessels numerous and tortuous. Veins enlarged and pulsating. Tissue opaque. Slatey hue. Few points. Macula distinct, few vessels approaching it.

*Right eye*—Nerve extremely hyperæmic. Border of lens hazy. Venous pulsation. Central excavation.

5. Man—Admitted April 6, 1871, aged 48. Demented. General Paresis.

*Left eye*—Nerve pallid. Vessels small and few. Arteries small. Vessels full. Some striation between nerve and retina. Nothing about macula. Nerve anæmic, or it may be incipient atrophy.

*Right eye*—Nerve of a more pink hue. Edges ill-defined. Tissue not clear. Veins rather full. Nothing about macula.

6. Man—Admitted November 5, 1868, aged 45, married, good habits. General Paresis. (Used atropine.)

*Right eye*—Intense hyperæmia of nerve. Physiological excavation. Vessels wriggle out of nerve like worms. Tissue of retina clear. Nothing at macula.

*Left eye*—Same as right.

7. Man—Admitted April 27, 1871, aged 32 years, single, has used tobacco. Demented. General Paresis. Duration three months. (Used atropine.)

*Right eye*—Nerve slightly hyperæmic. Edges hazy. Veins full and pulsating. Arteries normal. Slight striation. Tissues not clear. Vessels in retina tortuous. Some specks close to macula.

*Left eye*—Nerve hyperæmic. Edges not clear. No decided striation. Veins full. Can see macula. One or two specks.

8. Man—Admitted June 7, 1871, aged 38, single, has used tobacco and liquor. General Paresis. Demented. Duration six and a-half months. (Used atropine.)

*Right eye*—Nerve semi-transparent, hyperæmic. Edges not clear. Slight injection of nerve. Nerve looks foggy without decided opacity.

9. Woman—Admitted March 22, 1870, aged 51, single, good habits. General Paresis. Demented. Duration six months.

*Left eye*—Capillary hyperæmia. Vessels full. Edges sharp. No œdema of retina. No striation. Can not see macula.

*Right eye*—Deep capillary hyperæmia. Veins pulsating and full. Substance round retina normal. Edges clean. Can not see macula.

10. Woman—Admitted August 30, 1871, aged 46, married, good habits. General Paresis. Sub-acute mania. (Used atropine.)

*Right eye*—Pupil very small. Veins indistinct. Capillary hyperæmia. Edge of nerve apparently clear. Veins large.

*Left eye*—Pupil small. Deep capillary hyperæmia. Vessels tortuous.

11. Man—Admitted July 11, 1871, aged 27, married, good habits. General Paresis. Demented. (Used atropine.)

*Right eye*—Tissue of nerve somewhat opaque or white. Edges indistinct. Arteries and veins normal. Some specks near macula.

*Left eye*—Nerve tissue whitish opaque. Floating body in vitreous, attached to end of nerve. Vitreous clear. One or two specks on macula. Edges indistinct.

#### DEMENTIA, 18 cases.

In 12 the optic nerve and retina exhibited hyperæmia or infiltration. In six they did not. The causes assigned to the mental state in the first cases were, epilepsy 2; intemperance 3; masturbation 3; exces-

sive sexual indulgence 1; phthisis 1; ill-health 1; not given 1.

Duration had been from six months to a year in 3; for one year in 2; for three years in 2; for five years in 2; not stated 3.

Of the six cases not hyperæmic the causes of mental state were, epilepsy 1; hemiplegia 1; intemperance 1; not stated 3.

Duration, one year and less, 3; not stated, 3.

In searching for peculiarities among these cases, it may be stated that while there is nothing like uniformity in the ophthalmoscopic appearances, the preponderance of hyperæmic cases is to be noted. It is further notable that the degree of vascularity is very intense. This affects chiefly the capillary and venous circulation. See cases 12, 14, 15, 17, 18. The torpid condition of the cerebral nerve substance would appear to be reflected in the intra-ocular circulation.

12. Man—Admitted December 21, 1870, aged 50, single, good habits. Dementia. (Used atropine.)

*Right eye*—Intensely hyperæmic. Veins large and extremely tortuous. Physiological excavation. Swelling on edge of nerve. Striation all round retina. Small veins toward macula numerous and tortuous. Bifurcation deep in nerve. Hypermetropic 1-24. Macula not seen on account of head being tremulous.

*Left eye*—Extremely hyperæmic. Nerve striated. Veins large, both trunks and small branches numerous and tortuous. Hyperæmia of retina around macula. Snakey veins across macula. Veins relaxed and tortuous.

13. Man—Admitted February 3, 1870, aged 33, single. Dementia. Ill-health. 10 months. Choroiditis disseminata. (Used atropine.)

*Left eye*—Nerve slightly hyperæmic. Vessels numerous. Veins full. Arteries small. Pulsation distinct. Edge and surrounding retina striated. Choroidal epithelium marked. Macula very distinct. Vessels close to it. See foramen centrale: vessels come down on all sides to macula. At periphery vessels distinctly tortuous, but not in all parts.

*Right eye*—Nerve tissue opaque. Subretinal effusion. Transparent effusion behind retina at bottom of eye seen with  $-|7$ ; most anterior part with  $-|5$ . Signs of old choroiditis. Vicinity of nerve edge is ragged on nasal side. White streaks run through choroid.

14. Man—Admitted March 13, 1861, aged 30, single. Dementia. Masturbation. 14 months. (Used an extra quantity of atropine.)

*Left eye*—Macula not visible. Pin points near it. Vessels traced to centre. Nerve deeply reddened. Central physiological excavation small. Temporal border of nerve contains pigment. Striation adjoining retina. Tissue œdematous. Vessels tortuous, nerve slightly swollen,  $-|1.48$ .

15. Man—Admitted November 17, 1869, aged 23, single, has used tobacco. Dementia. Irregular habits. (Used atropine.)

*Right eye*—Excessive hyperæmia, and vessels very numerous. Disc and edge strongly striated. Middle portion of retina white. Macula very red (scarlet.) Vessels close to it. Veins large.

*Left eye*—Central excavation. Striation of disc and substance adjoining retina. Excessive hyperæmia. Venous pulsation. Veins large and opalescent. Macula distinct and red. Retina greyish. Fovea very marked. Close to vessels a few pin points between macula and disc.

16. Man—Admitted April 19, 1871, aged 41, married, has chewed tobacco to excess, intemperate. Dementia. Duration six months. (Used atropine.)

*Left eye*—Physiological excavation. Vessels numerous. Border of disc distinct. Substance surrounding retina appears as if marked by striæ, or as if broken into radiating dotted lines. Veins and arteries about the same. Macula visible but not well defined, with dots indistinct but numerous. Nerve not specially hyperæmic. Tissue clear.

*Right eye*—Nerve has central physiological excavation. Not very hyperæmic. Vessels numerous and fairly proportioned. Same dots as in left eye. Specked uniformly. Bifurcation of artery a little covered by connective tissue, suggesting obliteration of central artery. Macula sufficiently marked and surrounding retina finely speckled. Nerve tissue transparent. Edge well defined.

17. Man—Admitted August 27, 1870, aged 50, married, has used tobacco and liquor. Dementia. Ill health from injury. (Used atropine.)

*Right eye*—Deep hyperæmia of nerve. Edge ill-defined. Retina striated. Arteries small. Veins full. Tissue of nerve clouded. Macula perceptible but not pronounced. No abnormal specks. Can see choroidal epithelium.

*Left eye*—Nerve oblong vertically. Hyperæmic. Tissue clouded. Arteries small and tortuous. Veins full. Edge of nerve hazy. Retina striated and cedematous. A few glistening points around macula.

18. Man—Admitted December 20, 1869, aged 25, single, good habits. Dementia. Masturbation. Duration 5 years. (Used atropine.)

*Right eye*—Numerous pin points in macula. Vessels deep in nerve. Hyperæmia of surrounding retina.

Very striated. Moderate temporal excavation. Striation marked above and below and runs along emergent vessels. Pin points between macula and nerve, and beyond. Vessels of moderate size. Macula specially noticeable for striation and pin points. Retina œdematous.

*Left eye*—Macula distinct. Pin points. Looks granular. Nerve hyperæmic. Opalescent. Striation of border of retina distinct. Veins full. Arteries small. Pulsation evident. No excavation of any consequence. Retina near nerve appears striated. Not much infiltrated.

19. Man—Admitted June 21, 1861, aged 41, single, has used tobacco. Dementia. 5 years. Phthisis.

*Left eye*—Hypermetropic 1-10. Strabismus in early life. Veins tortuous. Nerve small.

20. Man—Admitted May 6, 1871, aged 22, single. Dementia. Masturbation. (Used atropine.)

*Left eye*—Nerve pink. Oblong vertically. Central physiological excavation. Edges not clear. Retina not striated. Tissue not clear. Venous pulsation. Nerve tissue clear.

*Right eye*—Central physiological excavation. Nerve hyperæmic. Distinct reflection from retina. Choroidal pigment deep. Iris brown. Eyes not regarded as abnormal.

21. Man—Admitted February 14, 1870, aged 28, single, has used tobacco, very intemperate. Dementia. 6 months.

*Left eye*—Nerve hyperæmic. Tissue hazy. Retina striated.

*Right eye*—Nerve hyperæmic. Faint striation. Marked pulsation. Macula not visible.

22. Man—Admitted July 7, 1870, aged 41, single, has used tobacco and liquor. Epileptic. Duration 3 years. Demented.

*Right eye*—Faint hyperæmia of nerve. Central physiological excavation. Retina striated. Venous pulsation strongly pronounced. Macula normal. Retina transparent. Striation round nerve.

*Left eye*—Slight hyperæmia of nerve. Physiological excavation deep. Venous pulsation not strong. Retina faintly striated around disc. One bright pin point on choroid.

23. Man—Admitted March 11, 1865, aged 30, single, good habits. Dementia. Epilepsy. Duration 1 year. (Used atropine.)

*Left eye*—Nerve hyperæmic. Retina indistinct. Arteries normal. Venous pulsation. Some veins enlarged. Macula studded with spots, which are also scattered over adjoining retina.

*Right eye*—Physiological excavation. No noticeable dilatation. Retina striated. Border of nerve heavily pigmented. Glistening points on macula but not so many as in left eye.

24. Man—Admitted December 19, 1870, aged 16, single, good habits. Epileptic. Demented.

*Left eye*—Nerve hyperæmic. Tissue transparent. Veins full and large. Striation above and below; elsewhere normal. Veins full. Arteries fair. Retina normal. Macula not visible.

*Right eye*—Nerve tissue transparent. Faint redness. Veins full. No pulsation. Arteries normal. Region of macula normal.

25. Man—Admitted April 1, 1862, aged 45, single, good habits. Dementia. Hemiplegia. Duration 8 months. (Used atropine.)

*Left eye*—Nerve tissue disposed to blue. Moderately transparent. Possibly capillary anæmia. Principal vessels normal. Macula not seen.

*Right eye*—Atrophy from injury. No specific difficulty.

26. Man—Admitted February 7, 1871, aged 23, single. Intemperance. Dementia. (Used atropine.)

*Left eye*—Vessels numerous. Retina clear. Macula visible. Congenital striation. Nothing abnormal.

*Right eye*—Nerve clear. Slight hyperæmia. Vessels numerous. Striation due to opaque nerve fibres. Nothing abnormal.

27. Man—Admitted January 19, 1871, aged 25, single, good health. Dementia. (Used atropine.)

*Right eye*—Myopic 1-16. Vessels full. Pulsation not excessive. Nerve substance transparent. Edges clear. Vessels of retina tortuous. Macula visible. Normal.

*Left eye*—Myopic 1-16. Veins full and pulsating. No infiltration. Macula visible. Nothing abnormal.

28. Man—Admitted April 19, 1867, aged 56, married, good habits. Dementia. Duration 7 years. (Used atropine.)

*Left eye*—Color of nerve nearly normal. Edges a little indistinct. Choroidal specks near nerve.

*Right eye*—Tissue of nerve nearly normal. Vessels normal. Edges indistinct. Choroidal epithelium thin, showing pigment.

29. Man—Admitted May 12, 1871, aged 34, single, good habits. Dementia. 4 months duration. (Used atropine.)

*Right eye*—Nerve pinkish. Arteries normal. Veins same. No striation of nerve. Macula distinct. No specks.

*Left eye*—Nerve pink and transparent. Arteries and veins normal. Lower vessels larger than upper. Can see choroidal pigment about nerve.

MANIA. Acute 15. Sub-acute 5. Chronic 6—26.

The cases of acute and sub-acute mania may be considered together. Among the 20 are found a portion with hyperæmia of the nerve and retina, viz.: 14; and another part in which these tissues are either normal or anæmic, viz.: 6.

Of the hyperæmic, the causes were: meningitis 3, epilepsy 3, masturbation 1, over work 1, intemperance and syphilis 1, typhoid fever 1, phthisis 1, ill health 1, no cause given 3.

The duration of the disease was comparatively brief, viz.: from two weeks to seven months; with one exception, in whom it had lasted seven years and was caused by an injury of the skull, (case 49.)

Of the cases not hyperæmic, the causes were: intemperance 4, masturbation 1, ill health 1. Their duration was in all less than three months; one was only 10 days, (case 31.)

It is true that the larger number of the cases show optic and retinal congestion, but in those which do not, the maniacal symptoms were severe.

We would not assume that the vascularity of the nerve is always an index of the circulation in the hemispheres; but we may suggest that the variety found in the appearance of the optic nerve accords with the view that mania is the result of exhaustion of nerve force, as well as of over excitation.

In the case of only ten days duration, the appearance of the nerve strongly suggests atrophy.

The cases of meningitis all exhibit optic hyperæmia; and the case of old injury (49,) shows marked signs of chronic neuro-retinitis.

30. Man—Admitted February 28, 1871, aged 27. Masturbation. Acute mania. Duration 1 month. (Used atropine.)

*Left eye*—Nerve pallid. Condition of anæmia, not atrophy. Tissue transparent. Vessels small and few. Arteries diminished and a little thinned. Veins a little larger.

*Right eye*—Pupil closed by iritis. Patient much excited.

31. Woman—Admitted April 19, 1871, aged 45, married, good habits. Acute mania. Ill health. Duration 10 days.

*Right eye*—Myopic 1-16. A bluish tint in nerve, suggests atrophy, and vessels tortuous. Retinal tissue normal.

32. Man—Admitted January 20, 1871, aged 35, married, intemperate. Acute mania. Duration 2 months. (Used atropine.)

*Right eye*—Nerve tissue transparent. Edges clear. Vessels numerous. Nerve tissue normal.

*Left eye*—Tissue clear, perhaps anæmic. Same as right eye.

33. Man—Admitted May 14, 1871, aged 50, married, smokes and drinks. Acute mania. Duration 2 months. (Used atropine.)

*Right eye*—Nerve pallid. Oblong vertically. Vessels large and tortuous. Pulsation decided. Nerve substance not infiltrated. Slight striation of choroidal pigment of fundus. Glistening points on macula. Erosion of macula. Difference 1-16 between summit and bottom of nerve.

*Left eye*—Macula discernible. No lesion. Points in its vicinity. Vessels close to it. Nerve hyperæmic. Vessels tortuous. Venous pulsation. Parallax great. Slight striation. Œdema surrounding vessels. Iris light blue.

34. Man—Admitted July 7, 1871, aged 28, single, has used liquor to excess. Acute mania. Duration 10 weeks. (Used atropine.)

*Left eye*—Nerve bluish white color. Somewhat striated. Retina not infiltrated. Vessels normal size. Venous pulsation. Macula distinct. No specks.

*Right eye*—Nerve nearly of normal hue. Fine striations. Vessels normal. Tissue of retina normal.

35. Man—Admitted November 15, 1869, aged 38, married, has used tobacco to excess, intemperate and has syphilis. Sub-acute mania. Duration 4 weeks. (Used atropine.)

*Left eye*—Slight hyperæmia. Tissue almost clear. Retina round nerve granulated, not striated. Veins rather large. Vessels on temporal side small and few in number. Retina extremely speckled around the vicinity of the nerve as well as macula. Macula not well defined. Central portion of fundus equal to six diameters of optic disc across, sprinkled with faint yellow spots, a few lustrous, most of them dim.

*Right eye*—Nerve a little pallid. Small vessels few. Veins and arteries natural, but perhaps diminished. Retina hazy. Intensely speckled over large region like an eruption of lichen.

36. Man—Admitted February 12, 1870, aged 47, married, has used tobacco. Ill health. Acute mania. Duration 2 weeks. (Used atropine.)

*Left eye*—Nerve pinkish, slightly hazy. Veins large as usual. Retinal tissue normal.

*Right eye*—Nerve tissue pinkish, not clear, faintly striated. Adjacent retina speckled, as if from absorbed exudation. Vessels not extra full. Macula visible. A few pin points near retina.

37. Man—Admitted July 21, 1871, aged 25, single, intemperate. Acute mania. Meningitis. Duration 4 weeks.

*Right eye*—Great tortuous vessel on retina, may be congenital. Nerve moderately pink. Edges clear. Physiological excavation.

*Left eye*—Nerve tissue transparent. Vessels fair size. Slightly tortuous on retina. Macula distinct. Retinal tissue slightly dotted. Probably healthy. Appearances not decisive.

38. Man—Admitted June 13, 1868, aged 31. Sub-acute mania. Overwork. 6 months.

*Right and left eye*—Same. Nerve hyperæmic. Physiological excavation. Veins large. Vitreous hazy. Myopic 1-8. Eye restless. Macula not seen. Patient much excited.

39. Man—Admitted February 21, 1870, aged 22, single. Sub-acute mania. Irregular habits. Masturbation. 4 months.

*Right eye*—No physiological excavation. Marked hyperæmia of disc. Striation of entire edge. Veins full—pulsating. Opalescence over veins and arteries as if due to connective tissue in retina. Hyperæmia distinct. Inverted image.

*Left eye*—Similar.

40. Man—Admitted April 22, 1871, aged 52, married, smokes. Acute mania. (Used atropine.)

*Left eye*—Great number of vessels. Tissues hyperæmic and not clear. Edge pigmented. Macula normal. No excavation.

*Right eye*—Old iritis.

41. Man—Admitted January 7, 1869, aged 35, married, good habits. Dementia. Sub-acute mania when admitted. Aphasia complete.

*Right eye*—Nerve hyperæmic. Infiltration of its border distinct. Veins largely dilated. Arteries small. No pulsation. Patient uneasy.

42. Man—Admitted May 16, 1870, aged 41, single, good habits. Acute paroxysmal mania. Duration 3 weeks. (Used atropine.)

*Right eye*—Vessels large. Deep capillary hyperæmia. Edges clear. Physiological excavation. No changes in retina. Myopic 1-16.

*Left eye*—Myopic 1-8. Vessels upon nerve quite large. Man restless. Large frame and head.

43. Woman—Admitted February 2, 1871, single, good habits. Acute mania following typhoid fever. 5 months.

*Right eye*—Central physiological excavation. Nerve tissue decidedly pink. Not perfectly clear. Vitreous hazy. Retina striated above and below. Macula visible. Iris dark. The haziness of retina may be congenital.

*Left eye*—Central physiological excavation. Great parallax. Nerve hyperæmic. Vessels full. Macula visible. No specks.

44. Man—Admitted October 5, 1870, aged 27, single, good habits. Acute mania. Phthisis. 2 months duration. (Used atropine.)

*Right eye*—Nerve moderately hyperæmic. Veins large: very opalescent: pulsating. Nerve tissue not transparent: edges somewhat clear. Small vessels near macula tortuous and run to centre. Specks on macula.

*Left eye*—Macula distinct. Small vessels tortuous approaching macula. Nerve tissue transparent. Central and temporal excavation. Edges clear and faintly striated. Veins large and pulsating. Retina near nerve looks infiltrated. Vessels wriggle on retina.

45. Man—Admitted August 9, 1870, aged 17, single, good habits. Acute mania. Meningitis. Duration 2 weeks. (Used atropine.)

*Right eye*—Nerve hyperæmic. Tissue striated. Vessels numerous. Veins large. Striation of all adjoining retina decided. Venous pulsation emphatic. Choroidal spots. Macula very distinct. Surrounding

macula are grayish spots. Some pin points between macula and disc. Beyond macula faint choroidal thinning.

*Left eye*—Striation of nerve and adjoining retina. Veins opalescent; pulsate, are not enlarged. Arteries fair. Macula distinct. Surface of retina gray. Vessels run close to macula. No pin points.

46. Man—Admitted September 27, 1870, aged 52, married, has used liquor and tobacco. Acute mania. Epilepsy. 7 months. (Used atropine.)

*Right eye*—Nerve cloudy, hyperæmic; edges heavy. Vessels full. Macula not visible.

*Left eye*—Pupil closed by iritis.

47. Man—Admitted October 18, 1871, aged 33, married, good habits. Sub-acute mania. Meningitis. Duration 7 months. (Used atropine.)

*Right eye*—Nerve moderately hyperæmic. Veins large. Arteries normal. Physiological excavation. Striation of edge of nerve and all adjacent retina. Veins opalescent and pulsating. Macula distinct. Choroidal atrophy as well as retinal specks.

*Left eye*—Nerve hyperæmic. Tissue not clear; hazy; some swelling. Veins pinched at egress, dilated outward. Arteries small. Striation decided, reddened and slight œdema. Beyond nerve, arteries are slightly tortuous. Macula not clear. Specks near, and vessels run close to it.

48. Man—Admitted May 3, 1870, aged 22, single, good habits. Acute maniacal attacks. Epilepsy. 2 weeks.

*Left eye*—(Used atropine.) Slight hyperæmia of nerve. Slight physiological excavation. Veins somewhat dilated and pulsating. Striation of adjacent retina. Some specks at macula.

*Right eye*—(No atropine.) Hyperæmia of nerve. Edge of nerve distinct. A little striated. Arteries and veins tortuous and pulsating. Macula not seen. Small pupil.

49. Man—Admitted January 19, 1870, aged 42, married, used tobacco. Epilepsy. Injury to skull. Duration 7 years. Attacks of mania with epileptic seizures. (Used atropine.)

*Left eye*—Hyperæmia of nerve. Deep temporal physiological excavation. Venous trunks large; not tortuous. A white patch on nasal side of nerve. Nerve partially concealed by vessels. Glistening cobweb look. Small vessels on temporal side are tortuous. Faint striation of surrounding retina. Macula not seen. Vessels run toward it.

*Right eye*—Nerve hyperæmic. Temporal excavation. Veins numerous. Tissue not clear. Border indistinct. Retina hazy. Choroidal epithelium slightly granular. Veins covered with faint opalescence.

#### CHRONIC MANIA, 6 cases.

Of these 3 show signs of inflammatory action or hyperæmia in the optic and retina, and 3 show no lesions.

50. Man—Admitted February 20, 1871, aged 49, married, good habits. Chronic mania. Duration 5 years. (Used atropine.)

*Right eye*—Neuro-choroido-retinitis. Nerve infiltrated, hazy. Patches of connective tissue in choroidal pigment. Vessels numerous and tortuous. Transparent subretinal effusion.

*Left eye*—Nerve tissue not perfectly transparent. Slightly pink. Slight exudation on retina at upper edge of nerve. Vessels rather full. Nothing at macula.

51. Man—Admitted July 27, 1870, aged 57, single, smokes and drinks. Chronic mania. Duration 2 years. Intemperance and vice.

*Right eye*—Myopic 1-16. External physiological excavation. Slight choroidal crescent temporal side. Tissue of nerve mottled. Lamina cribosa distinct. Veins and arteries pinched. Hyperæmia of nerve substance. No pulsation.

*Left eye*—Physiological excavation very deep. Myopic 1-48. Hyperæmia of disc. No pulsation visible. Veins and arteries normal. Retina normal.

52. Man—Admitted October 13, 1847, aged (at present) 64, single; good habits. Chronic mania. Duration (before admission) 3 years. (Used atropine.)

*Right eye*—Myopic 1-16. Vessels numerous not enlarged. Venous pulsation. Nerve hyperæmic. Central physiological excavation. Tissue not clear. Edge of nerve ill-defined. At macula decided erosion spots. No striation of retina about nerve.

*Left eye*—Nerve slightly hyperæmic. Vessels reduced in size. Tissue not clear. No pulsation. No striæ. Myopic 1-48. Region of macula as if exudation and absorption had taken place.

53. Man—Admitted July 3, 1871, aged 27, single. Masturbation. Chronic mania. (Used atropine.)

*Left eye*—Nothing abnormal. Iris dark. Macula distinct. Congenital opaque nerve fibres on retina. Nerve tissue transparent pink. Central physiological excavation. Nothing abnormal.

54. Man—Admitted February 20, 1871, aged 45, single, has used tobacco. Chronic mania.

*Right eye*—Nerve tissue not clear. Macula visible. Retinal tissue clear. No specks.

*Left eye*—No deviation from normal. Nerve transparent.

55. Man—Admitted October 14, 1870, aged 43, married, good habits. Chronic mania. (Used atropine.)

*Left eye*—Nerve nearly normal tint. Vessels rather small. Striation round nerve. Pigment on choroidal edge. Retina slightly granular. Unable to find macula. Veins pointed at nerve.

*Right eye*—Nerve pink. Arteries small. Veins not enlarged. Edge of nerve rather hazy. Retina not striated. Nothing noticeable about macula.

### MELANCHOLIA, 5 cases.

In only one case could any evidence of abnormal condition be detected within the eye.

In the remaining 4 the ocular tissues were healthy.

56. Man—Admitted December 21, 1870, aged 39, married, good habits. Melancholia. Overwork and heat. Duration 5 months.

*Left eye*—(Used atropine.) Nerve moderately hyperæmic. Central and temporal excavation. Striation on border of and surrounding retina. Veins moderately large and surrounded by opalescence. Arteries of fair size. Connective tissue around them abundant. Most abundant below. Striation distinct. Arterial sheath of connective tissue. Macula red and distinct. Retina hazy. Veins near macula. One large pin point above horizontal meridian. None near macula. Opaque nerve fibres above and below.

*Right eye*—(No atropine.) Not looked at.

57. Man—Admitted June 20, 1871, aged 25, single, good habits. Imbecile.

*Left eye*—Nerve transparent and pinkish. Vessels numerous. Some striation in retina. Tissue transparent and normal.

58. Man—Admitted December, 14, 1861, now aged 39, has smoked. Melancholia. Masturbation. Duration 6 weeks.

*Left eye*—Hypermetropic 1-12. Nerve normal hue. Edges distinct. Arteries and veins normal.

59. Man—Admitted March 25, 1871, aged 43, married, has used tobacco. Melancholia. Duration 2 years.

*Right eye*—Nerve normal color and texture. Vessels small. No distinct striation of edges. Some specks about macula.

60. Man—Admitted February 3, 1871, aged 50, married, good habits. Melancholia.

*Right eye*—Central excavation. Nerve tissue healthy. Faintly anæmic. Veins normal. Arteries small. Tissue of retina transparent. Macula not visible on account of having no atropine. Myopic 1-16. Nerve pinkish. Central excavation. Arteries small. Veins usual size. No striation. Edges well defined. Can not see macula.

The number of cases above described are too few to justify dogmatic generalizations. But one can not help being struck with the dissimilarity of the appearances in cases classified as belonging to the same category. The putting of a certain number of patients together, under one head, whose violent mental manifestations deserve the name of mania, is a convenience in certain respects; but no one pretends that this is a classification based on pathological distinctions. The actual state of the brain in these cases is widely unlike in different individuals. Hence there is no wonder at discrepancies in ophthalmoscopic appearances. In classifying insanity, mental manifestations have been made the basis of distinction, because indeed we have been unable to determine the physical state of the brain, which was the real disease. The ophthalmoscope may help us during life to arrive at some knowledge on this vital subject. But the necessary limitations of its power of penetration must be borne in mind. First, that it

shows only one of the prolongations of the brain, which may not be involved in the brain lesion. Secondly, the magnifying power yet obtainable is too small to show the intimate texture of the optic nerve and retina. As in the brain, it is impossible often to see the true lesions without the higher power of the microscope; so for the optic nerve, we need much greater power than we yet have in the ophthalmoscope. But, despite these restraints upon its capability, it shows us often important facts. For example, atrophy of the optic nerve not infrequently precedes disorders of the brain and spinal cord; and sclerosis may be the pathological change at the foundation of all the lesions. Again, retinal hemorrhage may be the precursor of cerebral hemorrhage.

It is also true that serious lesion may exist in the optic nerve and retina without any damage to sight. In the case of the insane, it is important to question them closely as regards the degree of sight, and make them fulfill the proper test by test letters, such as those of Snellen. If practicable, the field of vision should be determined so as to discover defects in the peripheral part of the retina. Certainly the inspection of the optic nerve by the ophthalmoscope should never be neglected.

It is hoped that opportunity may be afforded for continuing the above investigations, and many more cases be added to to the above list.

NEW YORK, December 15, 1871.





