

correct impingement of natural color rays. This portion of the organ is relatively similar to the so-called skin, and in fact the sensory portion of it, in its comparative development, is nothing more nor less than a bundle of highly developed-tactile corpuscles. The transmitting portion of the optic nerve has its analogue in the total number of afferent tactile nerves, which, in the visual apparatus, have been gathered together into a sheathed bundle so as to be enabled to pass *en masse* through a small foramen to the central ganglion. The cerebral retina is the compound area of cell termination of the optic nerve, in connection with the related low perceptive cells of evanescent power, and has its equivalent in the series of cerebral sensory areas devoted to the proper physiological evolution of the sensations which give rise to the primary perceptions of taction.<sup>1</sup> Just as there has been an evolution of organic form through physiological action and the transmission of bettered material from parent to offspring, so there have been increases in certain parts of the individual organism. This is seen in the differences of the actions of the sensory nerve fibres in the macular and circummacular regions of the same ocular retina, and serves as a reply to the question why certain elements of the human ocular retina have better powers of receipt than others in the same membranous coat. As the receiving tip of the individual filament is different in grade of substance and ability of action, so its internal prolongations must differ in physical constitution and physiological worth. These differences of organic construction and sensory power, associated with changes in intensity and number of natural color vibrations, give solution to the whole problem of color-perception, and answer the long asked and vexed question—How is natural color perceived?

1507 LOCUST STREET, PHILADELPHIA.

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#### ARTICLE XIV.

A CASE OF PERNICIOUS ANÆMIA; RECOVERY. By GUY HINSDALE, M.D.,  
of Philadelphia.

THE following case, which was under treatment at the Episcopal Hospital, Philadelphia, is of such an interesting character, and terminated so successfully, that it is deemed worthy of being placed on record.

Theo. J., æt. 22, a bartender, was admitted to the wards of that institution September 20, 1882, under the care of Dr. Morris J. Lewis. For the past three or four years he had been in the habit of drinking wine, gin, and whiskey freely, and of using tobacco. He had been taking from

<sup>1</sup> These positions have been compared with supposed similar ones for taction. This could have been done with the other senses.

fifteen to twenty-five drinks a day, and he said that the whiskey he drank might be reckoned at half a pint daily. He denied having had any venereal disease or its symptoms, although he had frequently been exposed to contagion. His parents had died in his infancy.

The patient's previous health had been good, and he stated that he had never had four days' illness in his life. He never worked in phosphorus, metals, or paints. He was of good color until his present attack, which commenced two weeks previous to admission. He was not thin; a fair amount of subcutaneous fat was present. Having been constive for some time past, he began to have a dull, continuous pain in the back of the head, which was augmented by exertion. For seven or eight days his conjunctiva had been yellow; a little later his skin was tinged with yellow, but upon admission had more of a waxy-white color. Three days previous to admission he had anorexia, followed by a chill at night with vomiting. His tongue was pale and covered with a white coat. No symptoms of dyspepsia; bowels never loose. Mucous membranes pale.

The patient's spleen was slightly enlarged in the vertical line. Its area of dulness measured 4 x 4 inches. The area of liver dulness began anteriorly at the sixth rib, and extended to the margin of the ribs, but not below. The superficial veins of the arms were small and of a slightly pink color. There was no lymphatic enlargement perceptible, and no pain on pressure over the bones. Fluid was noticed in the abdominal cavity a few days after admission.

The heart was rapid (120); pulse small, but regular. The apex beat was at the fifth interspace, 1.5 inches within the nipple line, and was quite forcible. There was a soft, long, systolic murmur over the pulmonary artery, and a loud venous hum in the neck on sitting up. There was no œdema; neither had there been any hemorrhages, nor were there any petechiæ.

The blood was examined by Dr. F. P. Henry, one of the attending physicians of the hospital, who reported, October 1st, 985,000, and November 1st, 1882, 890,000 red corpuscles to the cu. mm., one-fifth of the normal number. White cells numbered one to two hundred red, absolutely but not relatively diminished.

The urine was slightly acid; sp. gr. 1.015. No albumen was found after several examinations. Five days after admission, tests showed the presence of bile.

The following is a record of the temperature:—

M.		E.		M.		E.	
Sept. 20	.....	101		Oct. 8	.....	100	100.4
30	.....	102.4	100	9	.....	99	100.5
Oct. 1	.....	99	99.4	10	.....	100	100
2	.....	98.2	99.2	11	.....	100	100.4
3	.....	99	100.1	12	.....	98.8	100
4	.....	98.5	100	13	.....	98.8	98.9
5	.....	98	100.5	14	.....	98.5	100
6	.....	99.6	100.5	15	.....	100	100.5
7	.....	98.5	101	16	.....	99	100
				Oct. 17	.....	99	100
				18	.....	99.5	100
				19	.....	99.5	99.5
				20	.....	99	99.5
				21	.....	99	99
				22	.....	99	98.5
				23	.....	98.5	98.5
				24	.....	98	

The pulse at first remained rather high—110 to 130.

The journal shows that, after the first few days, excepting his pain in the back of the head, he complained of no bad feeling, and only occasionally felt weak and liable to faint. By the end of the first month the color of his face and lips improved. His veins filled up, and the blood became richer and the man stronger. After seven weeks of treatment he was discharged.

The treatment from the start was arsenic, in Fowler's solution, and afterwards arsenious acid in pill, with iron. Cod-liver oil was added after the first week, and quinia and tincture of iron after the second. The patient's diet was liberal, and consisted of milk, mutton, chicken, eggs, etc.

Dr. Albert G. Heyl, one of the ophthalmic surgeons of the hospital, has furnished the following notes:—

"Oct. 8, 1882. R. E. Media cloudy. Margin of the disk obscured below. Retinal arteries, if of abnormal calibre, somewhat increased as regards diameter. The retinal veins were tortuous, apparently flattened, and about double the normal calibre. A number of circular hemorrhages with white centres were observed; most of them were contiguous to large vessels, probably lying underneath them in the deeper layers of the retina. L. E. The condition was much less marked than in the R. E.

"18th. The principal change observed was in the hemorrhages. In some the red coloring matter had been completely absorbed, leaving behind oval or circular white spots. In others the absorption was not complete, and then the patches were speckled with red points. This seems to show that, in certain abnormal states of the blood, retinal hemorrhages may lose the red coloring matter before the remainder of the clot is absorbed.

"A few days later the case was examined by reflecting sunlight into the eyes. Some fresh hemorrhages were observed. Also the optic disk and fundus were of a yellow hue, due, perhaps, to the hæmatin which had escaped into the tissues. The conjunctiva was also noted as being yellow.

"The patient then passed from observation until July 30, 1884. The result of the examination at this date was as follows: R. E. V =  $\frac{20}{100}$ . Probably with cylindrical correction the vision would have been greater, as the refraction was astigmatic.

"L. E. V =  $\frac{20}{50}$ .

"In the R. E. the margin of the optic disk was distinct. All over the fundus the fine arterioles and venules were visible, due to the abnormal injection. In the upper half of the fundus the main veins were enlarged. In the lower half the following observations were made.

"(a) The main artery seemed to alter its calibre—sometimes to become thinner, then of normal calibre. (b) If the observer's eye be directed so that the line of sight falls in the vertical plane passing through the vessel, it appears well defined; if it be viewed in a slanting direction, it is very dim, and with difficulty differentiated from the retinal tissue. This may, in a measure, be due to the direction given to the ophthalmoscope, but principally is caused by some abnormality in the blood current. (c) One or two pulsatile movements were noticed in the vessel on the retina; they could not be compared with the radial pulse. (d) From the main artery a branch was given off, of an apparent calibre of 1 mm.; it rapidly diminished to a point, and for the remainder of its course appeared as a fine thread-like vessel; following its course was a vein of similar thread-like calibre. Just before its junction with a large vein the current lost its continuity, appearing as red points separated by white interspaces. There was a general haziness over the fundus, probably due to retinal clouding. In the L. E. the veins were generally hyperæmic. An arterial branch with a conical beginning and thread-like continuation leading to a spot characterized by pigmentary changes was likewise observed.

"These late changes are unknown, I believe, in connection with pernicious anæmia, and point probably to a defective state of the intima of the vessels, dating back to the acute stage of the dyscrasia."

I have taken the trouble to hunt up this man, and now, over two years from the date of his discharge from the hospital, I find him fully restored to health. He weighs over one hundred and sixty pounds—a gain of twenty-five pounds since leaving the ward. Dr. Henry kindly examined the blood again, and reported, July 31, 1884, "4,500,000 red corpuscles to the cubic mm. No white corpuscles in the specimen examined. The blood may therefore be considered of the normal standard. The blood flowed freely on moderate puncture of the finger, affording a marked contrast to that obtained two years ago, when more than one deep puncture had to be made before a drop could be obtained."

The ophthalmoscopic examination has been given in Dr. Heyl's report. The man is in full bodily vigor. On listening to his heart, the murmur present during his illness is not heard, but the first sound may be said to be muffled. The second sound is distinct. The lungs are clear. The liver and spleen are both enlarged. The man still drinks beer, but considers himself temperate.

The descriptions by Drs. Sidney Coupland,<sup>1</sup> Stephen Mackenzie,<sup>2</sup> Pye-Smith,<sup>3</sup> Pepper,<sup>4</sup> Lepine,<sup>5</sup> and Gardner and Osler<sup>6</sup> should certainly be read by any one interested in the study of this disease. Pye-Smith says that the diagnosis can never be considered absolutely certain during the patient's life; but he believes that occasionally recovery has taken place beyond reasonable doubt, and mentions, in a list of 122 cases of the disease, 20 cases of recovery, which he believes to be well substantiated. He describes one case which was under observation, however, for only one year after apparent recovery, but in which no blood count was made; also another case, forming the subject of his article, which, after being discharged from Guy's Hospital, improved, was re-admitted, and died fourteen months from the commencement of treatment; another, in which the count fell to 1,100,000, then to 425,000, recovered, the final numeration being nearly five million corpuscles in the cubic mm.

A case of pernicious anæmia,<sup>7</sup> which was under the care of Drs. J. H. Hutchinson and Morris J. Lewis, in the Pennsylvania Hospital, was discharged apparently well (no blood count was made), and he was able to return to his work as a coal-miner; ten months later he was re-admitted to the hospital with the same symptoms, and, I am informed, died of the disease. Dr. Hutchinson has also seen a second case of fatal remission in

<sup>1</sup> Coupland. *Gulstonian Lectures*. *Lon. Lancet*, 1881, vol. i.

<sup>2</sup> Mackenzie. *Lon. Lancet*, 1878, vol. ii.

<sup>3</sup> Pye-Smith. *Guy's Hospital Reports*, 1883.

<sup>4</sup> Pepper. *Amer. Jour. Med. Sciences*, Oct. 1875.

<sup>5</sup> Lepine. *Rév. Mens. de Méd. et Chirurg.* 1877, p. 63.

<sup>6</sup> Gardner and Osler. *Canada Med. and Surg. Jour.* 1877, p. 385.

<sup>7</sup> *Medical News*. Philadelphia, February, 1879.

pernicious anæmia. Such occurrences have been recorded by Habershon,<sup>1</sup> Wilks,<sup>2</sup> and Lepine.<sup>3</sup>

As for retinal hemorrhages, Coupland states that they do not imply a fatal termination; and, on the other hand, their absence does not necessitate a favorable prognosis. Quincke found no retinal hemorrhages in 9 out of 39 cases.

Pernicious anæmia is therefore not necessarily a progressive disease. The fact that these patients sometimes temporarily regain their health has doubtless tempted some to believe that a cure has been effected, while, on the other hand, the absolutely hopeless view of the affection entertained by most writers has doubtless led others to doubt the accuracy of their diagnosis had they called it progressive pernicious anæmia.

The records of the case which I have furnished, extending over more than two years, and terminating in a normal blood count, and full bodily vigor, add one more to the list of cases which justify us in having a slightly more hopeful view even of so dangerous a malady as pernicious anæmia.

4004 CHESTNUT ST., PHILADELPHIA.

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#### ARTICLE XV.

A CASE OF ONE-SIDED TRANSITORY EXOPHTHALMOS, WITH UNDISTURBED FUNCTION AND MUSCULAR MOVEMENTS OF THE EYE AND THE COEXISTENCE OF ENOPHTHALMOS OR RECESSION OF THE GLOBE. By ROBERT SATTLER, M.D., Ophthalmic Surgeon to Cincinnati Hospital, etc.

EXOPHTHALMOS, or displacement of the eyeball, constitutes a constant and characteristic symptom of the diseases of the orbit attended by inflammatory exudation, also of tumors, cysts, etc., and of traumatic lesions, accompanied by hemorrhagic extravasation. In another rare class of cases, it is equally constant and conspicuous—rupture of the internal carotid within the cavernous sinus, thrombosis of the ophthalmic veins, aneurism of the ophthalmic artery, intra-cranial aneurisms, etc., and, in other instances, it forms the prominent feature of a typical group of symptoms, *i. e.*, Exophthalmic goitre.

Exceptionally it may exist with undisturbed function of the eye, and without resulting in discomfort or annoyance to the individual. The only case I have been able to find on record, illustrative of this rare type, is referred to and described, under the term simple exophthalmos, by Mackenzie, in his work on the eye.

<sup>1</sup> Habershon. Lon. Lancet, 1863, p. 518.

<sup>2</sup> Wilks. Guy's Hospital Reports, 1857.

<sup>3</sup> *Loc. cit.*, p. 63.