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BY

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HYSTERICAL ANÆSTHESIA, WITH A STUDY OF THE FIELDS OF VISION.

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THE achromatopsia, or dyschromatopsia, which has been described by various authors as occurring in hysteria, and especially in those cases in which the not uncommon symptom of hemi-anæsthesia is present, was first studied by Galezowski,¹ especially in Charcot's wards of the Salpêtrière. Briquet has called attention to the forms of amblyopia which sometimes accompany hysterical losses of sensibility, and Landolt,² also working with Charcot, examined and reported many cases. These all seem to have presented unilateral anæsthesia with changes in the extent or arrangement of the fields of color-vision, chiefly in the eye of the affected side, or total loss of color-perception in one eye. It is rarely, says Landolt, that both eyes are not in some degree deranged.

Charcot describes the arrangement of the color-fields as follows:

"There are colors for which the visual field is physiologically more extensive than for others, and these differences in extent of the visual field are always reproduced, following in every case the law for each color. Thus, the field for blue is the largest; yellow, orange, red, green follow in this order, and last, violet is perceived only by the most central portions of the retina. In the pathological state with which we are concerned these characteristics of the normal condition appear in some sort exaggerated, but in varying degrees. The various circles which correspond in the examination with the limits of vision for each color, narrow concentrically after a fashion more or less marked, following the rule established by the normal condition."

¹ Galezowski (Thèse, 1865, p. iii.) reported the first case of hysterical amblyopia, which was observed in the service of Dr. Grisolle, in the Hôtel-Dieu. The patient was a Miss V., aged nineteen, who, in addition to the entire list of hysterical symptoms presented trouble with the left eye to such an extent that she could only read large letters, and had complete internal hemiopia. With this eye she had also lost the faculty to distinguish colors, so much so that yellow and pink appeared white; red and blue seemed black. This condition lasted for two weeks. See also Gazette des Hôpitaux, 1877, page 75.

² Archiv de Physiolog. normal. et patholog., tome ii., 1875, p. 624.

Instead of simple concentric diminution of the color-fields, some of the French patients had a reversal of the order of occurrence of the colors, and some bad cases had absolute loss of the color-sense, seeing everything, as Bernutz phrases it, like a sketch in India-ink.

Bernutz, in speaking of the loss of sensibility in hysteria, says that

“Anæsthesia, either of the whole body, which is infinitely rare, or of one-half, and that usually the left half of the body. . . . constitutes . . . one of the primordial symptoms of this neurosis.”

He adds that it may be said to be a general rule that the anæsthesia is limited to one part, perhaps of the skin of the body, perhaps of the mucous surfaces, in especial that of the conjunctiva of the left eye, “which exists in almost every hysterical subject, with or without achromatopsia, as described by Galezowski.”¹

Since attention was called to these cases in this country, many have been carefully studied for color and general pain- and touch-senses in the clinic of Dr. Weir Mitchell at the Infirmary for Nervous Diseases, and the following reports show some of the results. We have not thought it necessary to give the histories of our patients in more detail than would suffice to show their hysterical characteristics clearly, and careful statements of the tactile, thermal, and pain sensibility—as these are the points of whose relations with the changes in the color-sense we wish to speak.

CASE I. *Complete hysterical analgesia; aphonia; normal visual fields.*—Private patient, aged sixteen, small for her age. She has been menstruating irregularly without pain, and is the youngest of a large family in the South. She had been indulged from her birth and had naturally lost all power of self-control, having been denied the advantages of control by others.

In May, 1888, she became nervous and was taken ill at a school whither she had been sent against her will. During this illness an overdose of mercury slightly salivated her, and after this she became better. She was at this time attacked with aphonia, became very violent, refusing all food for days, and screaming if any noise offended her hearing, which had become extremely sensitive. The bowels were costive and had to be kept open by enemata.

A careful examination showed all her organs to be in good order, but she had what has been described by Dr. Mitchell, in his book on the *Nervous Diseases of Women*, as “hysterical ataxia.” The fear of a fall or other accident from this trouble of incoördination indisposed her to attempt to walk, or to use her will, and she was becoming rapidly will-less. The urine was clear, but it was passed only once in twenty-four hours, sometimes only once in forty-eight hours, and then not more than two or three ounces. For some weeks she did not pass more than four ounces a day. She was analgesic from head to foot, almost as completely so as was Case II.

It is best illustrated by saying that she had no sensation in the breast or under the finger-nails. The most severe test of this condition with

¹ Nouveau Diction. d. Méd. et Chir., art. Hysteria.

which we are acquainted, is the use of a faradic current with two wire brushes on the nipple. To this she was perfectly indifferent. Nevertheless, her sense of touch was fair and her localization good, but her appreciation of thermal differences was very feeble. Unless the temperature was extreme, she found it difficult to decide if it were heat or cold.

The examination of the eyes revealed the following conditions: Vision one-half and two-thirds respectively of normal, which, by the correction of a hypermetropic astigmatism under a mydriatic, rose to full sharpness of sight. The following formula was found to correct the optical error:

$$\begin{aligned} \text{O. D.} + 1.00^s \text{ C} + .90^c \text{ axis V. } \frac{20}{\text{XX}} \\ \text{O. S.} + 1.50^s \text{ C} + 1.^c \text{ axis V. } \frac{20}{\text{XX}} \end{aligned}$$

There was deficiency in the amplitude of accommodation corresponding to the error of refraction, together with a low degree of insufficiency of the internal recti. The ophthalmoscope revealed oval disks, somewhat distended and slightly tortuous retinal veins, with undue prominence of the central lymph sheaths. There were no abnormal pupillary phenomena. The form-fields in each eye were absolutely normal. The color-fields—blue, yellow, red, green—followed in the order given and without any material contraction. Thus in the right eye:

	Outward.	Upward.	Inward.	Downward.
Blue	75	38	42	48
Yellow	75	28	32	38
Red	55	30	25	35
Green	45	20	25	25

The left eye presented no material difference from that just recorded. These observations were several times repeated, the last time just before the patient was discharged.

It is not necessary here to go into the treatment, but the little savage was easily tamed, and after three months' time went home in blooming health and has had no relapse since.

CASE II. *Complete hysterical analgesia; nearly normal visual fields.*—Private patient, aged twenty, single, white, living in Pennsylvania. Family history unusually good. No injury, no special disease, no bad habits. She was in good health until she began to menstruate, between twelve and thirteen years of age. At this time she became easily excited by emotion whether of pain or pleasure. Her face began to twitch, and she suffered from a moderate amount of insomnia, which continued as she developed. At sixteen she had attacks of neuralgia in the head, face, and hands; these were not usually very great; occasionally they would be severe. Sometimes the headache would be in one eye, sometimes in the other. The menstruation, which up to this time had been perfectly normal, began to be painful. She complained of "ovarian tenderness." On examination there proved to be no uterine disease whatever. The organ was in place and normal, nor were the ovaries sensitive on vaginal exploration; nevertheless, the abdomen on both sides was extremely sore, and she had been said to have ovarian tenderness. The organs of digestion were in good order. The pulse was easily excited, but the arterial tension was normal. Respiration was

25; the pulse 85. The sleep is slight and easily broken. Her general strength is moderate, but a walk of two miles excessively fatigues her. Her station is bad; on closing her eyes there is three inches antero-dextral sway. There is no vertigo and her gait is normal. There is no paralysis anywhere. Tactile sensation appears normal. As regards her temperature-sense, she sometimes mistakes cold for heat, but never heat for cold, though this is an error sometimes made in health. She is absolutely analgesic from head to foot. There is no part of her body into which it is not easy to thrust needles without causing her any other sensation than that of mere touch. After she had been subjected to such an examination she could tell from the sensation when a needle was thrust into her, and recognized it as different from a touch, although it was painless. In order to give an idea of the completeness of this condition, it is only necessary to say that a needle could be run into her breast, or under her finger-nails, without giving her the least sense of pain. When she first came under treatment she was nearly insensible to the most violent electrical stimulus, perfectly so to heat. But after a time she regained to some extent the power to feel pain, although never the ability to feel a needle thrust into her. She did not suffer in the least degree from a faradic current going through a wire brush over a dry skin. Excepting that she is extremely sensitive to all emotion, there are no hysterical manifestations whatever.

By June, 1889, she made great general gain in strength, but scarcely any as regards sensory trouble, though well enough to be regularly at work as a nurse.

Examination of the eyes of this case revealed the following facts: Direct vision normal; slight decrease in the amplitude of accommodation corresponding to the presence of a simple hypermetropic astigmatism; no abnormal pupillary reactions; an insufficiency of four degrees of the external recti (esophoria). Each optic disk was a vertical oval, the nasal edge slightly blurred by hazy retina, and the transverse veins distinctly tortuous. An examination of the field of vision (Fig. 1) demonstrated that there was no change in the relation of the colors one to another, and no decided contraction in the field of vision. This examination has quite recently been repeated now that the patient has gained in general strength, with the result of exactly confirming the previous observation, or, in other words, the field for form, blue, red, and green (green is not represented on the diagram; violet and yellow were not tried) was the same during the period of universal anæsthesia that it is now since the restoration of the patient to more perfect health.

CASE III. *Complete left-sided hysterical anæsthesia; contraction of visual field.*—The patient (private) is a case of neurasthenic conditions with highly hysterical developments. She is constantly in tears, and exercises emotion on the slightest occasion, and even when there appears to be no excuse for the display. She has slight twitching of the limbs, and occasionally hysterical hiccough. The remaining history of this case has no characteristic conditions.

When first seen, in May, 1889, the patient had a very indistinct sense of pain over the whole left side. The needle-prick was felt very little in most places. It was perceived better when plunged into the tissue deeply; it then created a sense of uneasiness. There were a few areas of insensibility. On the thigh and on the inside of the leg the needle-prick was better appreciated, but there was an unusual want of sensi-

Fig. 1.

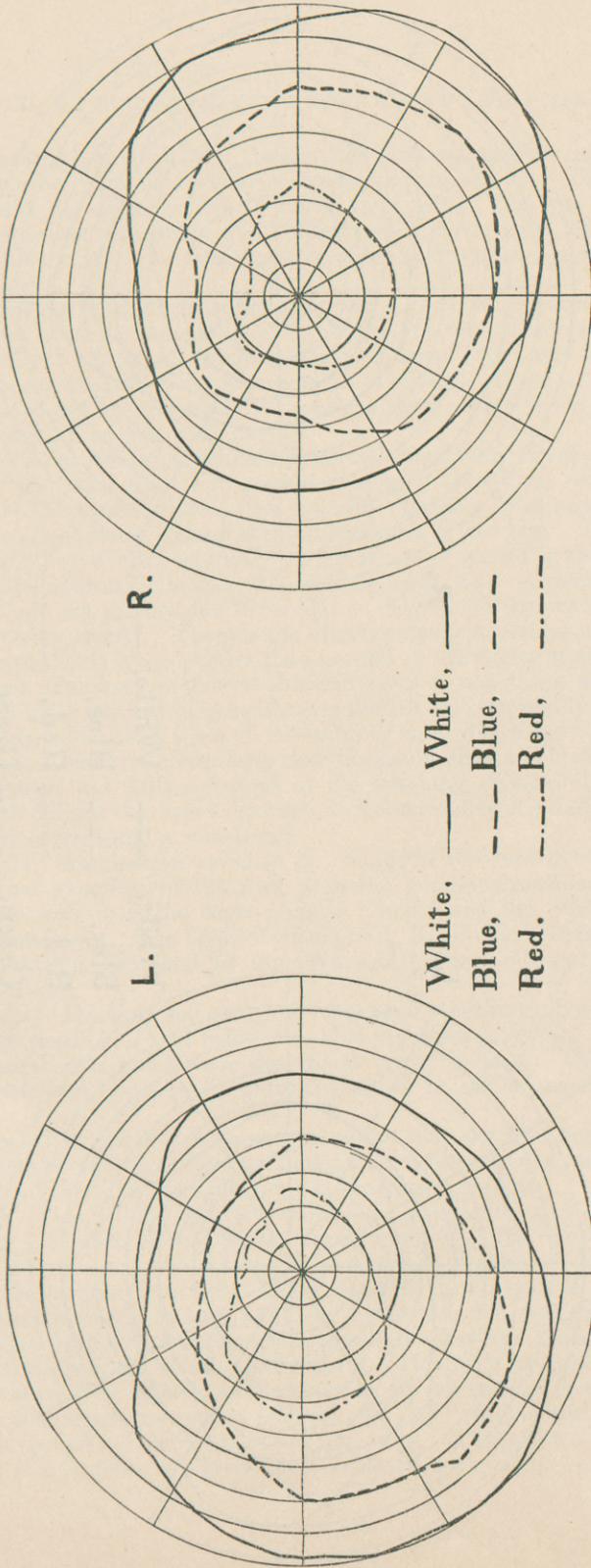
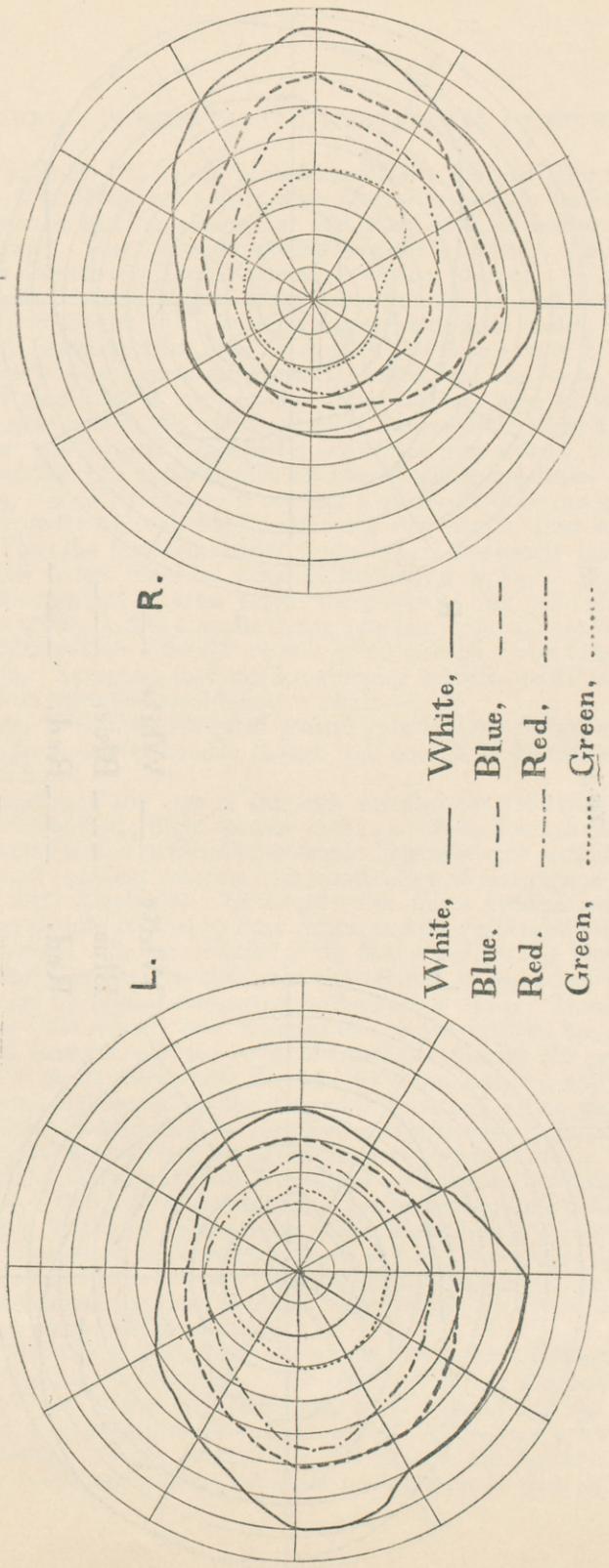


FIG. 2.



bility to pain in the left half of the face, the forehead, and the left hand, whereas in other parts of the body comparative pain was felt. The sense of touch was not quite perfect in her fingers' ends. She was able to locate impressions reasonably well. Heat and cold she could determine with tolerable ease. She was, therefore, a case of complete lateral left-sided analgesia.

The following notes describe the condition of the eyes: Central vision normal; no muscular anomalies either in the external or internal muscles. Oval optic disks, with slightly mellowed nasal edges, and full central lymph-sheaths. Low hypermetropia. The fields of vision (Fig. 2) exhibit concentric but irregular contraction without change in the normal order of white, blue, red, and green.

CASE IV. *Distributed incomplete hysterical anæsthesia; irregular contraction of the visual fields, and partial reversal of the normal relation of the colors.*—This case (private) does not differ greatly from other cases of the hysterical state. There is slight weakness of the legs. The proverbial mobility of all hysterical symptoms is well shown in the distribution of the anæsthetic areas. All over the body want of sensibility to pain is found in patches, but from day to day the situations of these spots vary very greatly. There is the usual complete acuteness of touch-sense, except that it is less perfect than normal in the fingers at all times.

Repeated examination showed that the areas of anæsthesia were frequent, and more marked in general upon the left side, especially the left arm and leg, while other spots of insensibility were distributed over the right side and scattered irregularly over the trunk, face, and limbs. The patient herself was fully conscious of the lessening of sensibility, and hailed with delight the rapid recovery of feeling under the daily use of the faradic current and a wire brush.

An ocular examination revealed no change in the central vision, in the external excursion of the eyes, or in the pupillary reactions. The optic disks were oval, the edges slightly blurred, and the refraction a low hypermetropia. The fields of vision (Fig. 3) revealed decided contraction both for form and for blue, red, and green (yellow and violet were not tried).

Right eye: The blue and red lines cross each other in such a manner that on the nasal half and below, the blue is greater in extent, while in the temporal half and above, the red is larger in area. The green, greatly restricted, occupies its natural position in the sequence of the colors.

Left eye: The red field is greater in extent than the blue field in the entire circumference except at the horizontal meridian of the nasal side; the blue and then the green field, much contracted, follow.

CASE V. *Complete left hysterical anæsthesia; contraction and œdema of the left leg; irregular visual fields; partial reversal of the color-fields.*—Patient (private), aged thirty-one, is the mother of three children, the youngest born three years ago. Menstruation is nearly painless. There is no organic disease. In July, 1887, she had a sharp attack of dysentery, which lasted over a week, after which she had what was probably hysterical paralysis of the bladder and rectum. The urine had to be drawn off, and the rectum emptied of its contents by mechanical means. At this time she became extremely nervous, and had "sinking spells," with spasms of the left side of the face, head, and foot. The left hand became violently shut, and the foot passed into a state of extraordinary extension.

FIG. 3.

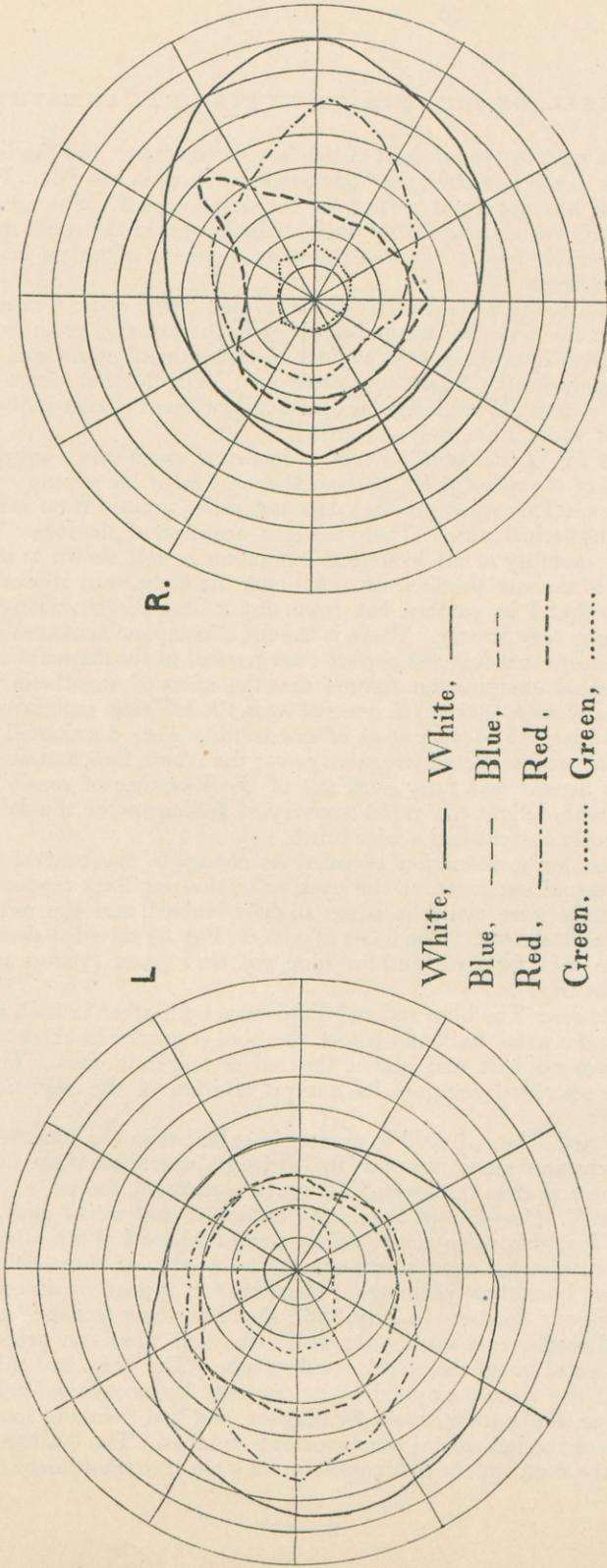
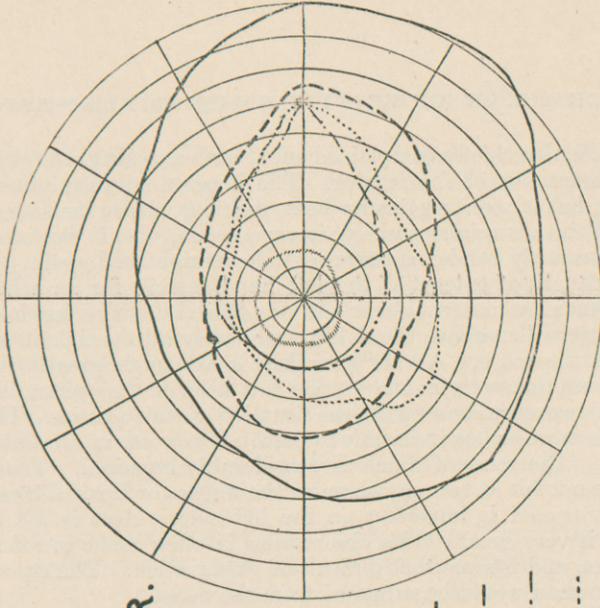
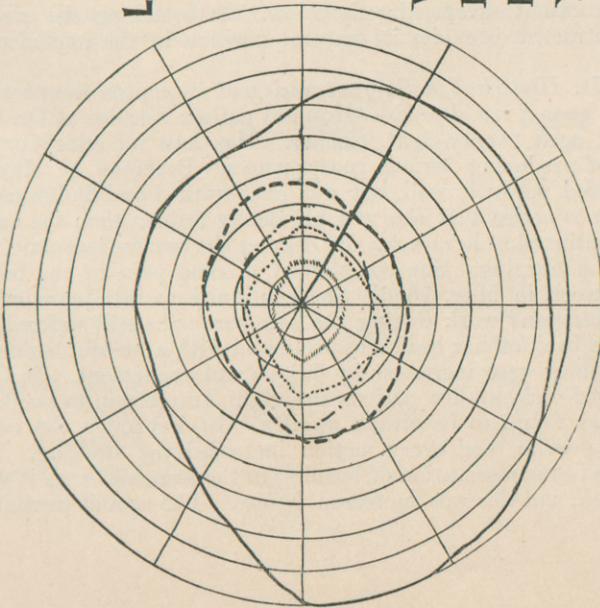


FIG. 4.



R.



L.

White, — White, —
Blue, - - - Blue, - - -
Red, - · - · - Red, - · - · -
Yellow, · · · · · Yellow, · · · · ·
Green, ~ ~ ~ ~ ~ Green, ~ ~ ~ ~ ~

The difficulty chiefly complained of at present (May, 1889) is a hysterical contraction of the left leg. The knee can be straightened with difficulty, but it soon regains its bent position. If, as she states it, it is "locked" in a straight position, it remains so, but, if she attempts to walk, it instantly bends, and refuses to be straightened again. She has curious attacks of œdema of the left hand, lasting for an hour, caused by excitement, whether pleasurable or otherwise. The leg has also at times been swollen above the ankle, and nearly all the time it is a little swollen at the ankle. At her periods this œdema is greatly increased, and becomes then very notable. She has ache of the spine; in four or five places pressure causes pain, the situation of which varies. The whole left side is more or less insensible to pain. It is worse in some areas than in others. The sense of touch is considerably impaired. The compass points are not felt as two anywhere on the fingers or lips. The sensation as to heat or cold is imperfect on the left side. Heat is felt as pain, unless it is very great. This observation is often made in reference to other cases, and is somewhat difficult of explanation. The case is worse when seen than would be supposed from the notes.

The following notes describe the condition of the eyes: Vision two-thirds of normal in each eye. Pupils large, equal, and actively responsive to the reactions of light and shade, convergence, and accommodation. Distinct insufficiency of the internal recti muscles. Oval, rather gray, optic disks with hazy nasal edges. Many lymph reflexes throughout the eye-ground. No macular lesions. The refraction a simple hypermetropic astigmatism. In the fields of vision the following peculiarities were noticed (Fig. 4):

Right eye: An irregularly contracted form-field. The blue field is next in extent, except below and to the nasal side, where it is exceeded in limit by the yellow line, which in turn is the next largest field, except above, where it is surpassed in extent by the red field. In the *left eye* there is a distinct contraction of the form-field especially above, contraction, but natural position of the blue field, while the red and yellow lines cross each other in such a way that in all meridians the red is the greater in extent except directly below. In both eyes the green field, much contracted, occupies its natural position in the sequence of the colors.

CASE VI. *Hysterical swelling; paresis and incomplete anæsthesia of the left arm; normal visual fields.*—Hospital patient (service of Dr. S. Weir Mitchell), aged twenty-eight, teacher. Has had no injury or disease capable of producing serious consequences. Previous to May, 1886, she appeared perfectly well, but was over-worked and had some worry. She began to notice that she was physically feebler than she had been, but she continued at her work. By degrees she became insomnic, waking early in the morning. She complained of some pain in the back, and gave up work in May, 1886. She continued to take care of herself without doing any work during the summer. She still suffered a great deal in the back of her head and neck, and with a painful spine, all of which troubles were increased by fatigue and excitement. In October, she observed that at her periods the right arm began to swell. Soon after it was found to be always swollen. In February, she ceased to be able to write, and every motion increased the swelling. At this time there began a sensation of burning in the arm, although it was cool to the touch, and this was increased by use. The arm at present seems

to vary very much in size. (See Table I.) All excitement or emotion is felt in the arm, and she insists that all shocks are felt in that member, or, as she says, "go to the arm." In obedience to the law which seems to control this form of œdema it varies greatly; sometimes the swelling does not extend above the elbow, and sometimes it reaches to the shoulder. Undoubtedly, at her worst, the right leg is affected as well. The right breast is certainly smaller than the left at all times. At seven inches above the wrist the right arm measures eight inches in circumference, and the left seven and a half inches. For the right hand the dynamometer registered 25 and the left 25, but she says the right hand used to be twice as strong. K.-J. ++ on both sides; reinforcement normal on both sides. On the right side, however, there is a faint attempt at clonus, the foot moving three or four times and then coming to a pause. The arm muscles and elbow-jerk are normal.

TABLE I.—MEASUREMENTS OF WRIST, MIDDLE, AND UPPER FOREARM, IN INCHES, BEFORE AND AFTER MENSTRUAL PERIOD.

	Wrist.	Middle forearm.	Upper forearm.
March 7. Day before menses appeared,	6½	7½	9
During this period she suffered unusually.			
March 13. Third day after cessation of flow,	6½	7	8½
March 16	6¾	7¼	8¾

At this time she went home for a week, and while there wrote a good deal, the arm becoming worse. On her return a careful examination was made as to sensation, which had been neglected at the previous examination. The pain-sense below the elbow was greatly reduced in the right arm, scarcely existing at all. Touch-localization was much less perfect than it should have been. The condition was difficult to state with exactness, as the distribution of the change seemed unequal. Everywhere from the shoulder to the elbow the tissue was difficult to pick up with the finger and thumb. A large part of the swelling was clearly not œdematous in the sense in which we use that term. A very remarkable change was observed in the temperature of the two hands, which is illustrated by the table appended.

TABLE II.

	Morning.		Evening.	
	R.	L.	R.	L.
February 13. Hand . . . . .	. . . . .	. . . . .	97½°	98½°
Arm . . . . .	. . . . .	. . . . .	94½	96½
Axilla . . . . .	. . . . .	. . . . .	98½	99
February 14. Hand	92½°	93½°	97½	97½
Arm	91½	95	94	96½
Axilla	98	98	98½	98½
February 15. Hand	95½	95½	95½	95½
Arm	95	95½	92½	94½
Axilla	98	98	97½	97½
February 16. Hand	92½	93	86	89
Arm	90½	92½	90	92
Axilla	98	98½	97	97

In April, 1888, she was reëxamined, and showed no change for the better. Prolonged pressure showed a small pitting indicating a slight amount of œdema. The analgesia in both leg and arm appeared to be increased.

This seemed to be a rather unusual and irregular case, such as was described by Dr. S. Weir Mitchell in *THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES*, under "Unilateral Swellings of Hysteria." Although the analgesia did not exist through the whole side, it was still sufficient to make it worth while to study the color-fields.

An examination of the eyes revealed no abnormalities other than a slight hypermetropia with corresponding deficiency in the amplitude of accommodation. There were no manifest insufficiencies of the external eye-muscles. The eye-grounds were healthy, with, perhaps, slight thickening of the fibre layer of the retina surrounding the upper and lower edges of small, vertically oval optic disks. A study of the color-fields made on several different occasions failed to determine any decided abnormality for blue and red. The green field was contracted to a smaller limit than that which is usually considered to be normal, and was smaller in contrast to the extent of the other colors. This was present alike in each eye, the fields of each corresponding in area.

CASE VII. *Epilepsy; hysterical hemiplegia; partial left-sided anæsthesia; contracted visual fields.*—Hospital patient (service of Dr. S. Weir Mitchell), aged twenty-eight years, single, American. Since seventeen years of age she has been subject to fits, sometimes one a week, sometimes many in a day. For a week before the first examination she had none. Hereditation is good; both parents healthy. The cause of the patient's disease is unknown: she has no discoverable disease in any organ. At her menstrual period she has some pain in the iliac region, of which she sometimes complains in the intervals. When the fit is approaching, she has slight pain in the left arm and the præcordium. This lasts for a few minutes, and may exist without any sequent fit. The onset of the spasm is sudden, and affects first the right face and neck; it then becomes rapidly generalized, and sometimes lasts an hour with brief intervals. Occasionally she has had the lesser epilepsy. The disorder is more frequent in hot weather, occurring every other day. Her treatment does not here concern us, and her history is interesting only because she has had attacks of hysterical hemiplegia.

For some two or three weeks past (May, 1889) she seems to have been more nervous and feeble than usual. She complains of pain in her left chest, and there is also a copious eruption of acne on the left side of the chest due to a belladonna plaster. She has been taking twenty grains of bromide three times a day, with arsenic, for two or three months. Increasing nervousness marked the near approach of an attack, which took place May 15th. She had been annoyed and troubled for some days by a variety of matters. While sitting at dinner she found great difficulty in moving her left hand, and felt her face turned slightly to that side, with a sense of tingling at her fingers' ends. Within an hour this developed into moderate chilliness on the whole left side. Neither the speech nor the power of swallowing was affected. Since then she has gradually become better, but still there is very little gain of strength. The dyna-

mometer shows 35 for the left side, and 48 for the right. A sensory examination in this case of the paretic condition is important. Portions of the left side, of the left face, and the fingers of the left hand were slightly altered as to touch, but not enough to enable us to detect any difference by the points of the compasses. As to pain, there was a different state of things. The whole left side was rather less susceptible to pain, even when pain was felt. In the right side, in the right arm and right leg below the knee there was insensibility to the prick of a needle. But here, as in other cases, a sense of pain, which seemed almost extinguished at a number of points, could be made active with the aid of a strong faradic current, if the conductors were dry and uncovered. It is to be observed that in some places insensibility was perfect in a limited area for an inch or two in diameter, but just outside the line sensation was again distinct. Also, it appeared in this case, as in many others, these pain-areas would continue to move. For instance, pain-sense would exist in a given area, and in half an hour that portion of the body would be again insensible. She had, as is usual in persons in this state, a sensitive region on the left side of the abdomen, a soreness which is popularly attributed to sensitive ovaries, but in the present case far too extensive to allow any such explanation.

A study of the eyes showed central vision very defective owing to the presence of a high degree of compound hypermetropic astigmatism associated with manifest convergent strabismus, the left eye being more amblyopic than its fellow. The optic disks were oval, sharply excavated, distinctly waxy in their deeper layers, and the retinas hazy and full of lymph reflexes. The fields of vision for form and color were concentrically contracted about ten degrees in all meridians, but there was no reversal in the order of the colors, nor crossing of the lines, nor reëntering angles, nor peripheral scotomata.

CASE VIII. *Right hysterical hemi-anæsthesia; partial left anæsthesia; reversal in order of color-fields.*—Hospital patient (service of Dr. Wharton Sinkler), aged thirty; single; Irish servant; family history good; menstruated at thirteen and since irregularly; previous history ordinary. Four years ago she experienced loss of power in the right foot, which became worse on exertion, however slight. The disability travelled upward, involving gradually the foot, the side, and the arm. A numb feeling now affects the leg and back. There are sharp pains along the side of the leg. She says she cannot sit up in bed; but, when ordered to do so, obeys without trouble. There is some twitching of the thigh at night. She walks badly, dragging the right foot. Patellar reflexes + on both sides; reinforcements not obtainable. Repeated blows easily produce very rapid contractions. Elbow-jerk normal on the left side, less than normal on the right. Dynamometer (Burq)—right, 6; left, 27. There is an attempt at ankle clonus (?). Sensation much worse on right side. She distinguishes touch, but cannot differentiate the head from the point of a pin in the right arm, hand, and shoulder. On the right chest and neck she recognizes the point, but not pain. Sensation is less, diminished in the right leg than in the right arm, but it is also analgesic. The left side is also analgesic, but distinguishes head and point. There is no pain on pressure over the nerve trunks.

Globus hystericus is nearly constant.

Heart and lungs normal.

An examination of the eyes elicited the following points: The vision

was equal in each eye—two-thirds of normal—the slight deficiency being due to a low grade of myopic astigmatism. The pupils were small, round, and normal in their reactions. The pupillary distance was unusually wide, 68 mm. The fields of vision were found in the following order:

<i>Right Eye.</i>				
	Outward.	Upward.	Inward.	Downward.
White	80	38	40	60
Red	25	10	20	15
Yellow	25	10	18	10
Green	18	8	12	7
Blue	5	5	8	5
<i>Left Eye.</i>				
	Outward.	Upward.	Inward.	Downward.
White	80	35	40	25
Red	30	12	20	18
Yellow	30	10	18	18
Blue	15	5	10	8
Green	5	5	10	5

From an examination of these numbers it will be seen that in the right eye the red field occupied the greatest area, next and about equal to it was the yellow, then the green, while the narrowest was the blue which, greatly contracted, surrounded the fixation-point. In the left eye the same conditions obtained, except that the green field was in all meridians smaller than the blue, except upward and inward, where it was equal to it in extent. The white field in each eye was much restricted. The optic nerves were oval; in the right eye the color a dirty gray with a sharply marked scleral ring; in the left eye the same gray color in the temporal half with a brick-dust hue of the nasal side, and similar sharp marking of the scleral ring. The central vessels were unchanged.

It is evident from an examination of these cases that in no instance was there loss of the color-sense, the achromatopsia of Galezowski, nor was there any disappearance of the colors in a constant order. In the two cases of complete anæsthesia there was no departure from the normal sequence of the colors; and, practically, no limitation in the area of the field of the one (Case I.), and but slight restriction in the other (Case II.).

In the cases of partial anæsthesia, in one (Case VI.) no abnormality for blue and red existed; green was by contrast contracted, and in two others (Cases III. and IV.) there was concentric irregular contraction of the color-fields; but in all three the normal sequence of the colors was undisturbed.

In two cases (IV. and V.), while the colors were correctly appreciated, their natural order was changed, the blue, red, and yellow lines crossing each other in such a manner that the red field became in some meridians the greatest in extent.

In only one case (Case VIII.) was there an approach to complete transposition of the colors so that the red became the largest field, followed by yellow, green, and blue. In none of the cases was marked amblyopia present, except in Case VII.; here the deficiency in visual acuity was due to a high grade of hypermetropic astigmatism and concomitant convergent squint.

We have had the opportunity of studying two cases of absolute hysterical hemianæsthesia, presenting the phenomena of crossed amblyopia. In one, a woman aged twenty-five years, seen by the courtesy of Dr. H. C. Wood, these symptoms appeared several months after the shock of a railroad accident. There was complete right-sided hemianæsthesia and loss of the special senses on the anæsthetic side, with amblyopia in so high a degree that quantitative light-perception was absent. The vision of the left eye was reduced to one-ninth of normal; red was the only color correctly appreciated, and there was left lateral hemianopsia.

In the other case, examined by the kindness of Dr. G. Oram Ring, who will publish the notes in detail, precisely the same conditions obtained, except that the amblyopia was less marked upon the anæsthetic side. In both of these cases the ophthalmoscopic appearances were normal.

If, as may fairly be supposed, these eight cases, taken at random from a large service, represent the ordinary conditions, then our conclusions as to the occurrence of achromatopsia with hemianæsthesia must be very different from those of the European observers. The patients were selected for study because they all presented greater or less degrees of loss or change of sensibility. As to this, it should be said that we cannot find any statement by the French writers, who are the original students of this subject, concerning the relative frequency of hemianæsthesia in all hysterical cases, except statements like that of Dr. Bernutz, already quoted, that it is "one of the primordial symptoms," or Charcot's remark in exactly the same sense,¹ which would imply that it was present as an almost constant characteristic. Further, as to generalized anæsthesia, or, more properly, analgesia, Bernutz calls it "infinitely rare," and Charcot "relatively exceptional." The results of the ward-service as well as of the out-patient department of the Infirmary for Nervous Diseases would not allow us to make assertions which should corroborate these. These services may, we think, be considered to represent well at least the Eastern United States, as patients come from all of them to seek treatment, and our eight quoted cases are natives of several States—Pennsylvania, Wisconsin, New York, Virginia, and New Jersey. Every case differs in the *quality*, too, of the sense-changes, and

¹ *Leçons sur les Localisations, etc.*, L. x. "In hysteria we have to do . . . with a unilateral anæsthesia. Total anæsthesia appears in relatively exceptional cases."

some have that very curious symptom of ability to feel heat, when great, as pain, while they cannot appreciate a needle-thrust.

The only general conclusions which it does seem possible to draw are that general anæsthesia, infrequent though it be, cannot for this country be supposed so rare as in Europe; on the other hand, complete or nearly complete unilateral anæsthesia, while commonly present, is yet by no means so constant a feature of ordinary hysterical cases with us as with these foreign authors, and when either of these states is a symptom, it is certain that changes in the perception of colors are far less often to be found accompanying them than the study of the French and German writers would lead us to expect, and are practically absent in the cases of complete anæsthesia. Just as these observers see more often than we grave hysteria with convulsive seizures, hysteria, in the male and hysterio-epilepsy, so it would seem they find hemianæsthesia with achromatopsia more common. Some of their facts, as that mentioned by Landolt of the frequency of concentric contraction of the fields in such states, are as true for this country as for Europe.¹

¹ Quoted by Charcot. See also the observations of Moravcsik in Laufenauer's clinic at Buda-Pest. *Centralbl. f. Nervenheilkunde*, 1887, p. 301.

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