a little pus in the mediastinum near the root of the left lung, but although I have passed a needle in there once it is not an operation which I would again approach with great equanimity of mind. I cannot find a surgeon bold enough to turn the heart or lung to the one side and explore this region, so at present I feel inclined to let matters rest until I am forced to do something. Amongst other rare complications of typhoid fever I may mention a case of abscess behind the ascending colon. This was opened by Mr. Puzey and the patient made an excellent recovery. One of Dr. Dickinson's patients had an attack of orchitis.

Hæmorrhage.—I have dealt fully with the question of hæmorrhage, and to-day I wish to confine my attention, so far as curative treatment is concerned, to those severe attacks which place the life of the patient in imminent danger. It is generally assumed that hæmorrhage is an unfortunate complication which we can neither foresee nor prevent, but this is a proposition which, after much thoughtful consideration, I feel strongly inclined to dispute. The expectant method of treatment by quietly folding our arms, waiting to see what will turn up next, and treating symptoms or morbid processes as these arise may be fairly successful in practice by the negative merit of preventing meddlesome interference, but it is not scientific. We ought to know what will happen or is likely to happen in any individual case and prevent or be prepared for the occurrence. The hæmorrhagic cases, or what Trousseau would call cases of "hæmorrhagic putrid fever," are sufficiently distinctive, and it requires no great prescience to tell the direction in which the danger tends, but in a considerable number of cases the risk of hæmorrhage is much more obscure. Even in these cases, however, if carefully observed, there will be found great deficiency in vascular tone, without perhaps the blood tension being excessively or even moderately low; there is an absence of any tendency to inflammatory reaction; there may be hypostatic congestion of the lungs, but this is of a purely passive character, and there is no pneumonia or even marked bronchitis; the circulation is languid, and there is probably a tendency to cold feet; the delirium, when present, is likely to be of a low muttering character rather than of an exalted or violent description; the skin may probably have an ashy grey or slightly livid hue, and if there be any acne spots on the body these will probably be found congested or perhaps contain small hæmorrhages. A certain number of men prepare the friends of the patient for any contingency by enumerating beforehand a list of all the principal complications of the disease. Now it should be known that in a vast number of cases, especially in those where there is a marked tendency to inflammatory reaction, the risk of hæmorrhage is almost *nil*. When the hæmorrhage is very profuse it is generally and readily asserted that there has been ulceration into a large bloodvessel, but there are no large bloodvessels in the small intestine. No doubt the bloodvessels supplying the inflamed portions of the intestines are enlarged, but still these are never of any great size. When a case is examined after death from hæmorrhage it will, I think, be always found that the bleeding has taken place not from one point, but from numerous points in one or more of Peyer's patches. Now if there had been proper healthy inflammatory reaction the whole of these small vessels should have been obliterated in the process of sloughing, no matter how extensive or how deep that sloughing may have been. It should therefore be our aim to maintain as far as possible a normal condition of the blood and bloodvessels, and to encourage a healthy reparative action in the tissues. This is what I am afraid, in the vast majority of cases, we do not do. The dietary in a large number of cases, consisting almost exclusively of animal products without any vegetable juices, must tend in the direction of a scorbutic taint. Milk, no doubt, is an antiscorbutic, but when it is an exclusive diet the blood is not sufficiently replenished with its normal saline constituents. I frequently order mutton broth in which fresh vegetables have been cooked but the cellulose afterwards removed. The patient may also be allowed the juice of grapes, oranges or lemons, but none of the cellulose. When there is defective vascular tone I usually prescribe the chlorides, especially the chlorides of calcium and potassium, as I have found these agents very useful under varying conditions, not only in preventing but also in curing the hæmorrhagic state. Chloride of barium in small doses is also a useful salt. The following is a good combination: Ten grains of chloride of sodium, from five to ten grains of chloride of calcium, from one to three grains of chloride of potassium, five grains of

bicarbonate of potassium, five grains of bicarbonate of sodium; water to one ounce—this quantity to be added to each pint of milk, whey or other liquid which the patient drinks. When chloride of barium is given I think it is better to order it separately and in strictly medicinal doses. A great many patients have been very improperly fed before they contracted the disease, and in such cases we have to remedy an unhealthy condition of the tissues and prevent further degenerative changes. During the progress of a long-continued fever we must neither poison our patients with the waste products of animal tissues nor deprive the blood of its normal saline constituents.

I do not attach much, if any, importance to epistaxis, or even to hæmorrhage from the bowel from congestion of the mucous membrane at an early stage of the fever, but profuse hæmorrhage about the end of the second or during the third week from ulceration or separation of the sloughs is a fact of the gravest significance. How far this form of hæmorrhage may be obviated in the future remains to be seen. In cases of severe hæmorrhage the immediate danger is fatal syncope from rapid fall in blood pressure, and the most effective remedy for this condition is transfusion of a normal saline solution into a vein. Transfusion into the cellular tissue is much too slow a process, and does not sufficiently raise the arterial pressure. Those who have much to do with this disease should always be prepared for such contingencies. Unfortunately a large proportion of these severe attacks of hæmorrhage occur in the middle of the night, or at other times when the medical attendant is not at hand; the nurses ought therefore to be instructed how to proceed in such emergencies. The patient's head should be depressed and the foot of the bed elevated by blocks. To remove the dangerous fall in the blood pressure the patient should be given immediately half a pint of cold milk to which there has been added half a pint of boiling water and one or two doses of the saline solution to which I before alluded. To arrest the hæmorrhage a large ice bag should be applied to the region of the cæcum and a hypodermic injection of ergotin should be administered. The best hæmostatic in such cases is perhaps turpentine in ten-minim doses every hour or two, and the peristaltic movements of the intestines should be lessened by repeated doses of opium. For some days the stomach should not be troubled with much food, and this should only consist of beef essence, soup, peptonised gruel, whey or other substances which do not form much excreta. The saline mixture should be continued. If there be any vomiting the patient should have ice to suck or swallow, and small nutrient enemata or suppositories may be given. A little soda water or small doses of champagne often prove grateful to an irritable stomach. Alcoholic stimulants should be reserved for emergencies and ought not to form any part of the ordinary treatment of hæmorrhage.

CLINICAL OBSERVATIONS ON HYSTERIA.¹

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IN considering hysteria we are confronted at the very outset with a difficulty which arises partly from the absence of a definition of the neurosis and partly from the complexity of its phenomena. The ancient meaning of the word and the ideas connected with it have been finally abandoned, and as yet no substitute for it has been found. There are many advantages to be gained by retaining the word "hysteria" whilst dropping the old theories in which it originated. Indeed, as a general rule which results from the continual progress made in medical knowledge, those diseases have been found to be most appropriately designated whose names imply no theory as to their origin. It is only by the study of its symptoms that we can finally learn what hysteria is and what it is not. To the labours of M. Charcot and the French school we are indebted for the chief advance in this direction. They have sought to determine the constant features of the neurosis and have succeeded in showing that, far from being

¹ Abstract of a thesis for the degree of M.D. Camb.

a malady whose symptoms may vary indefinitely, hysteria betrays itself at least in one large group of cases by the presence of certain constant signs more or less well marked in different patients. These signs they term "permanent stigmata." They arise partly from disorder of the motor centres, partly of the sensory centres. M. Blocq² enumerates them as follows:—

1. In the sphere of movement: contractions.
2. In the sphere of sensation: common sensation—anaesthesia and hyperæsthesia. Special senses—affections of vision, taste, hearing and smell.
3. In the sphere of nutrition: certain variations in the urinary excreta.

That these stigmata are present in a large number of patients is certain, but they do not seem to occur in all cases. M. Charcot himself admits the existence of "mono-symptomatic hysteria"—that is to say, cases in which the presence of the disorder is shown by a single symptom in the absence of other hysterical stigmata.

The object of the present essay is to determine what are the symptoms and signs met with in everyday practice in a general hospital in cases which would be generally admitted to be instances of hysteria, starting with the hypothesis that such cases may present a group of symptoms of a definite and more or less constant character, expecting to find in individual cases the variations from the underlying general type of the malady which are met with in all diseases, and at the same time carefully abstaining from preconceived notions as to the nature of the facts observed. The observations are founded on the study of seventy well-marked cases not selected but taken in the order in which they came under observation.³ With regard to etiology, the tendency of the French school is to consider hysteria as an hereditary disease. The causes which give rise to the manifestation of hysterical symptoms do not, according to this view, directly cause them, but merely provoke their appearance in an already predisposed person; they are thus exciting agents only. The hereditary taint may be directly transmitted, as in the case of a hysterical mother who has a hysterical daughter, or the parents may suffer from other nervous affections and have hysterical offspring. As a corollary of this view it must be added that the hysterical tendency may remain latent throughout life if the person be not exposed to the influence of agencies which are capable in his or her particular case—for what is an efficient cause in one person may be powerless in another—to call it forth. It seems to me that this hereditary character of the neurosis does not hold good for all cases.

Inquiry as to the existence of disease in the family history of twenty-eight female patients showed that in five instances the fathers of the patients were drunkards, and in many others there was probable but less certain evidence of alcoholism in the parents. In eight cases one or other of the parents had suffered from some form of nervous disease; in six of these the mother was the one affected. Either the father or the mother of five patients had suffered from asthma, and in eight there was a family history of phthisis. In six cases some of the brothers or sisters had suffered from convulsions in infancy or fits in later life. In eight cases of hysteria in children the family history in six was bad. There was a history of syphilis in the parents of one child, of alcohol in those of two, of infantile convulsions or fits at a later age in the brothers or sisters in five, and in addition the mother of one of the patients died from alcoholic paraplegia. In six cases of hysteria in men I failed to obtain any evidence of nervous disease, of alcoholism or syphilis in the parents or near relatives; two gave a family history of phthisis. From the above observations the predominant fact would seem to be the much greater frequency and severity of hereditary tendency to nerve disease shown in the case of children; so far this would tend to confirm the importance of the part played by heredity in hysteria, or put in another way we may regard its appearance in children as evidence of the intensity of the hereditary taint. The statements given above are most probably too low, as patients of the class from which out-patients are drawn are not always very intelligent or very anxious to give full information; this particularly applies to the answers made to inquiries about excessive indulgence in alcohol. I am of opinion, however, from experience of

out-patient practice, that alcoholism in the parents often leads to the development of various neuroses in the offspring. The frequency of phthisis in the family history seems rather great, although of course caution is necessary in drawing any inference from a small number of patients in the case of such a widespread disease. It may, however, be observed that the time when phthisical symptoms appear corresponds to that at which hysterical phenomena very commonly first show themselves. Passing on from the question of heredity, the outbreak of distinct hysterical symptoms is often preceded by a deterioration of the general health and the patient passes into a state of lowered nutrition, in which the nervous system suffers from want of a due supply of nutritive material. In hysterical women anæmia, with its attendant dyspepsia and constipation, is exceedingly common. Of the twenty-eight cases given above eighteen, or two-thirds, suffered from a marked degree of anæmia. If one may rely on patients' statements the depressing effects of influenza predispose to hysteria. In several of my cases influenza was given as the cause of the illness. The symptoms either appeared within one or two weeks after it, or later, after more or less prolonged periods of malaise.

The commonest exciting cause of hysteria is found to be a powerful emotion of some kind. The influence of injuries of various kinds is well established; and it is in cases of traumatic hysteria that we get the most direct evidence of immediate cause and effect. In other patients it is often difficult to obtain information as to a definite cause, as the symptoms come on gradually and indefinitely, or suddenly break out without any assignable reason. This, however, does not apply to children, for in the majority of these patients there is a history of a clear and definite cause of the attack. Highly emotional religious exercises may evoke hysteria, and most writers concur in acknowledging the disastrous effects that may follow unsuccessful or injudicious attempts at hypnotisation. I may also note that disease of the sexual organs does not *ipso facto* induce hysteria; although it must be remembered that sexual excesses may act as a predisposing cause on account of the general exhaustion they entail and the severe strain that falls on the nervous system. Mention must be made of the so-called "toxic hysteria," by which term is meant the occurrence of hysterical symptoms following on the action of various poisons, of which lead, alcohol, mercury, bisulphide of carbon and tobacco are the chief. No doubt persons who indulge freely in alcohol are more prone to hysteria than those who are temperate, but so far as my experience goes the resulting symptoms could not be distinguished from those of hysteria due to other causes. Of the action of other poisons I have no practical knowledge. Although there are large lead works near the Bristol Hospital, from which a considerable number of patients affected with plumbism are treated, I have not yet met with a case in which there were distinct hysterical stigmata, and conclude that such cases are rare. Some of the cases described under the title of "lead encephalopathy" are probably hysterical. Tobacco operatives are not especially liable to hysteria in my experience.

I have lately had a little girl under my care who suffered from hysterical arthralgia and loss of power in the right hip, which had prevented her from walking for six months and had followed rheumatic fever. She was speedily cured after admission into the hospital. The onset of the catamenia does not seem to have any effect in causing an outbreak of hysterical symptoms. Of forty cases in women, in twenty-five the onset of hysteria was between the ages of seventeen and twenty-six years, and in sixteen of these it occurred between the ages of seventeen and twenty-one years inclusive, in six cases at the climacteric, and in the remaining eight cases in the intervening period of life. This shows a very great preponderance of cases in the first group. In men the time of onset is most frequently between the ages of twenty and thirty, in many it is between thirty and fifty, and there is not the same great proportion for the earlier age as in women. In the large majority of children ten to fifteen is the age at which the symptoms appear. This was so in seventeen out of nineteen cases. With regard to the influence of sex, out of the nineteen cases of children ten were males and nine females, so that the numbers are practically equal, and the conclusion is reached that sex has in them no influence. For the rest I have notes of forty cases of women and of eleven cases in men, or nearly four to one.

A larger number of patients seek advice for convulsive attacks or other forms of the hysterical paroxysm than for any other symptom of hysteria, and I shall therefore consider

² De Stigmates Hystériques, Gazette des Hôpitaux, Jan. 23rd, 1892.

³ The cases especially mentioned are given in abstract only for the sake of brevity. Each case was systematically investigated for signs of organic disease, for sensory defects &c., but positive signs are alone mentioned and the negative as a rule omitted.

these attacks first. Thus of forty female cases thirty-four suffered from hysterical fits of mild or more severe character. Thirteen out of nineteen children and seven out of eleven men were similarly affected. The severest type of hysterical seizure—hystero-epileptic attack (*grande hystérie*), as described by M. Charcot from his observations on patients at the Salpêtrière—I have not witnessed. The common form of hysterical seizure may be complete, or one or more of the stages may be absent. The complete attack, as I have observed it, consists of (1) the premonitory period ending in the aura and passing into (2) the stage of tonic contraction or general rigidity, (3) the period of clonic spasms or wild movements, and (4) the period of delirium. Often two or three attacks succeed each other, the patient either lying quiet or talking or moaning in the intervals, the whole series lasting from one to two hours in bad cases.

The following case illustrates the main features of a moderately severe attack. A young man aged twenty, a collier, had previously suffered from a hysterical affection of the hip. An aura of a ball rising from the stomach to the throat preceded the attack. He had two of these whilst being examined. Whilst sitting in a chair he arched his back over the chair, off which he slid to the ground; he then lay in well-marked opisthotonus resting on his heels and on the back of his head; the respiratory movements became rapid and shallow; there was no twitching of the muscles; the eyelids were rapidly opened and shut; the pupils, slightly dilated, reacted to light. After about thirty seconds movements (purposeful) of flexion and extension of the arms and legs began and alternated with arching of the back in opisthotonus, from which position the buttocks were brought forcibly down against the floor. After some minutes he rolled over and over three or four times, coming to rest on his back, when he began to tear his clothes from his neck and chest; then rapid opisthotonic movements recurred and were followed by flexions and extensions of the trunk, in which he sat up and threw himself back, which brought the attack to an end. During the first part of the stage of violent movements the face was flushed and the eyes closed, in the latter part the eyes were open, the pupils acting to light. There was no twitching of the facial muscles or spasm of the jaws; there was a little frothing of the mouth. He came round very quietly, with a few sighs. It was doubtful whether there was at any time complete loss of consciousness.

In this case the concluding phase of delirium or delirious raving, so frequent in and so characteristic of hysterical seizures, was absent. In this delirious stage the patients describe aloud, as it were, the phantasmagoria passing before their eyes—e.g., they are in heaven amongst angels, or more commonly, as M. Charcot points out, the hallucinations are of a sombre character; they are surrounded by devils or strange monsters, or pursued by murderers. The attack may be imperfect, one or more stages being absent. In the milder forms of attack, which are very common, the patient gradually falls or rather slides to the ground and lies stretched out, with the limbs motionless; when he is raised there is generally slight rigidity of the limbs to be felt, but sometimes they remain flaccid. The eyes are closed or sometimes there is a rapid opening and shutting or flickering of the eyelids. The patient may sigh or moan from time to time. Out of these attacks he may awaken quietly. There is not complete loss of consciousness and the patients lie in a condition of partial stupor, from which they can often be roused and made to get up if they are spoken to sharply. Towards the end there is sometimes a period of delirium almost as well marked as when convulsions are present, and very frequently the patients tear at their hair and clothes when recovery is commencing. Still other of these milder attacks closely resemble attacks of syncope, so that different forms of the attack may very imperfectly represent the more fully developed form. The premonitory period with its phenomena immediately preceding the attack is fairly constant; the period of delirium is the next least seldom absent; while the stage of tonic spasm is often very imperfectly represented or absent.

Contrasting, briefly, the hysterical with the epileptic attack, in the majority of examples of the former the prolonged aura and the concluding stage of delirium are the most characteristic features. The stage of tonic spasm may be absent or ill marked in the hysterical attack, or, on the other hand, it may rarely be so prolonged as to put epilepsy out of the question. In the ordinary hysterical attack the loss of consciousness is not so profound as in epilepsy, and the character of the movements in the clonic stage is different.

The presence of anæsthesia requires to be carefully sought for. Most hysterical patients are not inconvenienced by it and are unaware of its existence. Occasionally, however, the hysterical directly seek advice on account of some form of anæsthesia; I find two instances of this out of seventy patients. With regard to the phenomena attendant upon anæsthesia—and first the superficial reflexes,—the plantar reflex is absent when there is anæsthesia of the legs; in hemi-anæsthesia it is absent on the anæsthetic and present on the other side. We may note that the plantar reflex is often found to be abolished in cases of functional paraplegia, in which there is no anæsthesia. The abdominal reflexes are sometimes absent, but more often in those of my cases in which this point was investigated they were unaffected. In cases of complete anæsthesia there is also loss of the muscular sense as shown by the loss of sense of position, of that of movement and of distinction between different weights when the eyes are closed. These senses may be dissociated; the last seems to be the most delicate and earliest affected. Thus a man in whom there was anæsthesia of the left arm and hand had no loss of the sense of position or of movement of the limb and could

FIG. 1.

Case of hysterical attacks and muscular weakness. Hyperæsthetic areas black. *a*, Hysterogenic zone. Loss of temperature sense over soles of feet; no analgesia or anæsthesia (tactile) here. Temperature sense also lost over anæsthetic areas in legs; elsewhere present.

accurately carry out when blindfolded suggested movements, but could not distinguish between different weights. As Dr. Bastian⁴ has shown, there may also be a loss of the idea of certain movements. Most often all kinds of sensation are affected together. Sensation may be entirely lost or deficient only. When the loss affects one form of sensation alone analgesia is most common, but tactile anæsthesia may be complete, with normal acuteness to pain. Amongst rarer forms in a boy suffering from paraplegia with contractions there were analgesia and loss of sensation to cold over the legs, whilst tactile sensation and sensation to heat and faradism were preserved. In another case sensation to pain and temperature was lost, whilst that to touch was normal over the paralysed arm.

According to French authors the topographical distribution of hysterical anæsthesia may be (1) general, (2) unilateral,

⁴ Lectures on the Various Forms of Hysterical or Functional Paralysis THE LANCET, Oct. 10th, 17th, 24th and 31st, 1891.

(3) scattered in areas distributed irregularly over the surface of the body and (4) affecting one limb only. The most common is the second variety—hysterical hemianæsthesia—fully described by M. Charcot. With unilateral loss of cutaneous sensibility there is loss or defect of smell, taste, hearing and contraction of the visual fields on the same side. One often finds, however, that the cutaneous hemianæsthesia is not quite uniform all over the affected side; it is more marked in certain parts and less evident or even absent in others, whilst roughly preserving the unilateral type. Fig. 1 is taken from the best marked case of the third variety that I have met with, in which the patches of anæsthesia were irregularly disseminated over the trunk and limbs. The patient, a young woman aged twenty-two, suffered from hysterical seizures following influenza. There were hyperæsthetic areas of skin over the shoulder blades, the right ovarian region and the right knee, and a hysterogenic and hyperæsthetic zone over the lumbar spine. She had loss of smell and taste on the right side, loss of sensibility over the conjunctivæ and contraction of the visual fields. The only affection of the muscular sense was an inability to distinguish between objects of the same size but of different weight when they were successively placed on the fingers. (Figs. 1 and 2)

In thirty-six women suffering from hysteria, in whom the presence of anæsthesia was carefully sought for, I found that in three there was general anæsthesia, but in two out of the three the anæsthesia was much more profound on one side of the body than on the other, and in the third loss of tactile sensation only was general, whilst over the legs there was analgesia in addition. Hemianæsthesia of greater or less degree was present in eighteen patients, in eleven it was left-sided and in seven right-sided. In three cases loss of sensation was of more limited extent, being restricted to the left leg, to the hands, and to one arm respectively. In ten patients there was no cutaneous anæsthesia. Of twelve cases of hysteria in children under the age of fifteen, hemianæsthesia was present in two, on the right and left sides respectively, and loss of sensation over the legs in one case. In the others sensation was unaffected. Of ten men, in three there was hemianæsthesia (left-sided in two of them), and in two more a limited area of anæsthesia was found. Two of the remaining five cases without anæsthesia were instances of monoplegia with contraction, so that cutaneous anæsthesia was less frequent in the children than in the adults and in the men than in the women.⁵ As regards vision the characteristic change in hysteria is a con-

FIG. 2.

Case of hysterical attacks. Disseminated areas of anæsthesia. Field for white, interrupted line; field for red, continuous line; field for green, dotted line.

Distribution of anæsthesia in "geometrical segments": here the loss of cutaneous sensation is confined to the skin of the paralysed limb and is abruptly demarcated by a circular line passing around it at right angles to its long axis. In the case of hysterical joint affections (paralysis, arthralgia) the anæsthesia has a regular distribution, which is always the same for each joint. For instance, if the foot and ankle are affected with hysterical paralysis the loss of sensation has the distribution of a "sock or stocking"; if the forearm and hand are affected there is a long glove of anæsthetic skin. The following cases are examples.

A servant was seized with pains, loss of power and numbness or deadness in the right leg, coming on gradually. She dragged the leg in walking. Sensation to touch, pain and temperature and the muscular sense were entirely lost over the right leg below a line drawn horizontally round the limb two inches below the knee-joint. The right plantar reflex was absent, the visual fields much contracted, greatly so in the right eye, in which colour vision was almost lost. She recovered in a few weeks. In another case of paresis of the right arm and leg in a young woman there was anæsthesia as high as the junction of the arm and shoulder in the former, and in the latter below a line passing horizontally around it at the patella. Professor Janet makes the suggestive remark that the distribution of the anæsthesia in these cases corresponds to the extent of the limb or organ affected with hysterical paralysis as it is understood in common parlance and not in scientific nomenclature.

centric contraction of the visual fields, which may be regular or irregular in outline. This contraction is as a rule bilateral, but is very much greater in the eye on the anæsthetic side of the body. I have not met with an instance

FIG. 3.

Hysterical paralysis and neuralgic pains in right leg. Complete anæsthesia and analgesia over shaded areas. Slight loss of sensation over right side of body generally as compared with left side. Right plantar reflex absent.

⁵ Cf. M. Gilles de la Tourette: *Traité Clinique et Thérapeutique de l'Hystérie*, p. 152.

of marked contraction of the visual field in one eye only. The contraction may be moderate or extreme, as represented in the accompanying charts. The fields of vision for the different colours are similarly affected with that for white. The charts show that the latter may be smaller than the fields for red and blue. Except in the extreme cases acuteness of vision is not affected, but when the contraction of the fields is very great there is also loss of visual acuity. As central vision is thus good in the majority of cases, the

Thus if the eye be steadily concentrated on an object, such as the fixation point of the perimeter, whilst the region of central vision, thus powerfully stimulated, remains acute the outer parts of the field are inactive, all the available power of vision, so to speak, being used up in fixing the point. In ordinary vision for distant objects, however, there is not the same amount of concentrated attention on one point, a corresponding less exhaustion of the centres and consequently a certain degree of visual acuity over the whole field.

FIG. 4.

Formerly hysterical paraplegia, now slight hysterical seizures. Field for white, interrupted line; field for red, continuous line; field for green, dotted line.

patients do not, as a rule, complain of any defect of sight. An explanation of the fact that patients do not perceive or suffer any disadvantage in ordinary vision from the small size of the field has been suggested to me by my friend Mr. C. H. Walker, the ophthalmic surgeon to the Bristol Hospital, to whom I am much indebted for his kindness in taking a large number of perimeter charts of the visual fields. It is that in the feeble condition of the visual centres they will only respond to a limited degree of stimulation at one time.

According to this view the contraction of the fields would be a phenomenon only appearing during close concentration of vision on one object. This is borne out by the common observation that the examination of the visual field in hysteria must not be too prolonged—to take its extent in four diameters is quite sufficient; if the examination is protracted a field may be obtained decreasing progressively in size with the length of the examination.

(To be concluded.)

CHOLESTEATOMA OF THE MASTOID CELLS.

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THE pathology of the tumours or rather accumulations known as cholesteatomata seems rather confused. By some they are considered as distinct neoplasms, by others as originating in desquamating epithelium, and by a few as concentric masses of inflammatory debris containing cholesterine and amorphous material with fat globules and fragmentary cells. The shape and consistence of these masses are largely determined by the unyielding nature of the confining walls, which are smoothed, rounded and extended by pressure absorption. It is necessary, especially in the ear, not to confound these growths with dermoid cysts, which frequently lie deeply, and may even impinge upon the meninges. A dermoid cyst has a distinct capsule and usually contains hairs. A cholesteatomatous formation is merely bounded by condensed laminæ and contains caseating debris. Undoubtedly a certain number of these cases are caseating masses of tubercle, which bear a strong resemblance to bovine tuberculosis (pearly nodules, *Perlsucht*). The fact of epithelioid cells being found in some of them in concentric layers reminds one of the implantation cysts¹ which follow injury when epithelial elements are introduced and

shut in. The epithelium of the auditory canal will readily spread into a cavity in direct continuity with it, and being constantly shed may in the course of years cause considerable accumulations. Virchow speaks of these formations thus: "The tumour that Müller termed 'cholesteatoma,' Cruveilhier *tumeur perlée*, which I have translated *Perlgeschwulst*, has exactly the same epithelial structure as that which Hanover called 'epithelioma.' Yet both exhibit very essential points of difference."² Ziegler gives a short but excellent account of these formations. "Cholesteatoma is a tumour that is not well understood. The soft white mass of the growth is composed of scales like those of the epidermis. It occurs chiefly in the dura mater at the base of the brain, about the transverse fissures. The places described are such that at the time of development of the brain primitive epiblastic cells might remain unelaborated and form the rudiment of a neoplasm at a later stage."³ It is questionable whether this latter explanation at all applies to the special formations under discussion. Though Virchow describes a kind of connective tissue capsule, and seems to look upon the formation as a neoplasm, I believe that there is no true cell proliferation, and that the main bulk of the material is due to the accumulations of cell destruction rather than to cell formation. St. John Roosa very briefly alludes to the subject of these formations. "They sometimes destroy the bone by pressure and may even extend into the cranial cavity."⁴ Field,⁵ in his

² Cellular Pathology, p. 482.

³ Ziegler's Pathology, Art. 663.

⁴ Diseases of the Ear, seventh edition, p. 479.

⁵ Diseases of the Ear, p. 224.

¹ Transactions of the Pathological Society, vol. xxxv.