

TREATMENT OF EPILEPSY.¹

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EPILEPSY is no longer the *morbis sacer*, the scourge of the gods of the ancients, against which therapeutic measures are necessarily futile, but nevertheless its ofttimes intractableness to treatment creates the too common impression that treatment is of little avail.

In truth, there are few chronic diseases in which therapeutic measures have equal power. But in order that their full power should be obtained, the treatment must be carefully adjusted and faithfully carried out; and this requires great care and patience on the part of the physician, and full confidence as well as untiring perseverance on the part of the patient. For this very reason pessimistic views on the part of the physician are exceedingly unfortunate, for they lead to lax methods of treatment, and inspire little confidence in the patient, so that failure is almost a certainty.

Scepticism, here, is but the natural reaction from the other extreme. For, as in many other intractable diseases, innumerable remedies have been vaunted for their high curative powers, which, on further trial, were found to be altogether, or almost, valueless.

Some of the discrepancies of experience are really surprising. For instance, that great physician Schroeder v. d. Kolk, believed counter-irritation to be an almost infallible remedy, and to-day it is scarcely used, while Herpin reported a cure of 28 out of 42 cases with oxide of zinc, a success unapproached, otherwise, in the treatment of this malady, and yet oxide of zinc is rarely prescribed for epilepsy now. These successful results may have been largely due to a fortunate selection of cases; at least in the case of

¹ A paper read before the Mississippi Valley Medical Association, at Louisville, Ky., Oct. 10, 1890.

Herpin, the results were partly confirmed by Voison¹ who investigated the cases reported by H. long after his death, and found many of them still cured of their epilepsy. But such favorable results, must, for the larger part, be attributed to hasty and inadequate observations, colored, furthermore, by ardent enthusiasm.

In order to duly appreciate the value of drugs, we must learn what we can of the natural course of the disease, and how it is effected by other influences.

As in other diseases, there is a natural tendency to recovery. According to Nothnagel, nature, unassisted by art, cures from 4 to 5 per cent. of all cases. Disease, especially acute disease, often cures epilepsy.

A temporary favorable turn in the disease is far more common than a definite cure. It is not uncommon for an injury or a wound or a surgical operation, especially a capital operation, to be followed by a reduction in the number of fits, or their entire cessation for a longer or shorter period of time. This fact should lead to caution in pronouncing a cure shortly after an operation for traumatic epilepsy—a rule rarely heeded.

Acute disease often causes a temporary suspension of the fits—a fortunate result, as it may, at the same time, necessitate the suspension of the anti-epileptic remedies. A change of scene or place, for instance entering a hospital or asylum, often causes a temporary improvement, as does frequently the administration of a new remedy, whatever it may be.

Such facts should make us cautious in drawing hasty conclusions as to the effect of drugs or modes of treatment at an early period. The permanent effects alone can be a guide to their efficacy.

The study of etiology is exceedingly important in approaching the subject of treatment. Two distinct and different conditions are to be specially considered ; firstly, an hereditary or acquired constitutional vice, which predisposes to the development of the disease, or perhaps it

¹ Bull., gener. de therap. lxxviii., 193.

should be considered the disease itself ; and secondly, local diseased processes, which, reflexly, act as exciting causes of attacks, and, in some instances, have caused the underlying constitutional vice. The first of these conditions we must suppose to be always present, and therefore the more important of the two, but the second has such practical bearings that it is of much consequence in treatment.

The local processes which act as peripheral, reflex sources of irritation, are of the most diverse character. The most common are injuries or wounds, especially injuries about the head, or wounds of nerves. Of local diseases we may mention : first, disorders of the alimentary tract. In infants these are very common, perhaps the most common cause of convulsive seizures. In this respect they play a less important rôle in adult life, though they may do so in cases where least expected. I will briefly mention an interesting case bearing on this point.

A man, now 50 years of age, of a healthy family, usually quite healthy and of a phlegmatic temperament, had in the course of 18 months ten convulsive seizures, which occurred always in sleep, and became more severe and frequent toward the end of this period. They ceased on the discovery and expulsion of a tapeworm. Six months ago, after a disappearance of five years, a convulsion again appeared and was followed by three or four others, in as many months. The man, on his own responsibility, and guided only by his former experience, took a taenicide, which was followed by the expulsion of a tapeworm.

The next source of irritation to be mentioned is in the genito-urinary system. In the male, phymosis, in the female, ovarian disease, are the ailments which here played the most prominent parts. Of late years much attention has been called to eye-strain, from lack of balance of the extrinsic muscles, or anomalies of refraction, as a reflex source of nervous disease. Though its influence has, doubtless, been overestimated on some sides, it is a condition which should be carefully sought for, and remedied when

found. In addition to the above I will only mention disease of the nasal mucous membrane, the removal of which has, in some instances, been followed by disappearance of the epilepsy.

All these peripheral sources of irritation—and I have only given the most prominent ones—deserve careful consideration. But they may lead into error in several ways. There may be a tendency to give them a much more widespread importance than is their due, and occasionally harm is done by the local treatment. This is especially true of gynaecological treatment, so often resorted to merely on account of the presence of nervous disease, to the very frequent detriment of the patient. This overestimation of the importance of reflex sources of disease is, on the other hand, liable to lead others to the opposite extreme, so that no attention is paid them at all—an equally fatal error. Each case should be carefully examined and treated on its own merits, quite regardless of what may have been found in other cases. But it must especially be emphasized that the removal of local disease must always be considered but a part of the treatment in cases of epilepsy. It must always be remembered that in addition to the local disease there is the constitutional vice ; or, if the former was the original cause of the epilepsy, the latter may now have gained an independent and stable existence.

In every case, therefore, whether a reflex source of irritation was found and remedied or not, careful attention must be given to the constitutional condition. This comprises all measures which tend to improve the general condition and tone up the nervous system. Among these we may briefly mention, avoidance of excitement, the leading of a quiet, peaceful life, outdoor life when possible, an abundance of sleep and light, nourishing food. Of special therapeutic measures I will only mention the perhaps most important, hydrotherapy. Of this form of treatment, properly regulated cold baths and sponge baths are most applicable.

In all cases of epilepsy the treatment thus far outlined should be instituted ; that is, the removal of peripheral

sources of irritation when found, and the general treatment to improve the tone of the nervous system. In some instances this treatment will be sufficient. Often patients come to us with the history of one, or only a few convulsions, in which the age and other conditions lead to the diagnosis of beginning idiopathic epilepsy. In cases of that kind, I have been accustomed to institute the treatment above mentioned, and, in quite a number, no convulsion has since appeared. But in cases of chronic epilepsy, we must resort, in addition, to anti-epileptic drugs. The number of such drugs which have been used is very great. Of those which have come down to us from the time before the bromides came into use, the most prominent are oxide of zinc, nitrate of silver, digitalis, and belladonna. Digitalis is, probably, of value in cases of weak heart and feeble circulation, and is still not infrequently used in such cases. Belladonna is also much in use at the present time, and is frequently a valuable adjunct to the bromide treatment. Trousseau, who wrote before the bromides came into use, considered belladonna the most valuable medicine in the treatment of epilepsy. He speaks of it as effecting a cure in rare instances, and as frequently exerting a powerful control over the disease. His method of administering the drug was to begin with 1-100 gr. of atropia once a day, and each month to increase the daily dose by 1-100 gr. until from five to twenty times that quantity was taken daily. In some instances he combined the belladonna with nitrate of silver, sulphate of copper, and oxide of zinc, successively.

With the introduction of the bromides came a new era in the treatment of epilepsy. It enabled physicians to obtain a control of the disease hitherto unapproachable. That it has not gained a much greater success than has already been accorded it is owing to lax methods on the part of physicians, and lack of perseverance on the part of patients. It is especially necessary in this mode of treatment to study carefully the patient, and the effect of the drug upon him. Occasionally a case is found in which the treatment is not applicable, but in the great majority it can be used with a greater or less degree of efficacy. As regards the dose, no

definite size can be mentioned. Each case is to be individualized. Some will bear the smallest dose badly, while in others four or five drachms can be taken daily for an indefinite period. It is well to begin with about fifteen grains two or three times a day, and very slowly increase the dose until the desired effect is produced. But two things should limit the size of the dose—the complete control of the disease, or the production of bromism. After reaching the maximum dose which can be well borne by the patient, or that which holds the disease in complete check, it should be continued in the same doses for a long period of time. If the disease is held only partly in check, it may be necessary to continue the dose with small modifications for years or for life. If the convulsions have altogether ceased, the medicine should still be continued for several years and then the dose gradually reduced until it be suspended altogether.² Sometimes, after eight or nine months, it may be safe to lessen the dose, but this must be done with great caution, and, if ill effects occur, the maximum dose must immediately be resumed. Sometimes the system seems to become accustomed to the drug, and the latter loses its control. If so, the dose must be increased.

Usually, the medicine should be given two or three times a day in equal quantities from day to day, but when the paroxysm occurs at stated periods, there may be some modifications in the mode of administration. If the convulsion usually occurs at a certain hour of the day, the whole daily quantity of medicine should be given a few hours before the expected time. If it occurs especially at stated times, for example, at the menstrual period, the drug

² The custom of Legrand du Saulle (Dujardin Beaumetz, *Leçons de Clinique Thérapeutique*, iii., 193) is, after one year of freedom from convulsions, to give the bromide only six days out of seven; after fifteen months, five days out of seven; at the end of eighteen months, only four days out of seven; and after two years, only three days out of seven.

Seguin (*N. Y. Med. Jour.*, Apr. 5, 1890), begins a gradual reduction when three years have passed without any manifestation of the disease, giving gradually smaller doses until the end of the fourth year, when the medicine may be discontinued altogether.

should be given in large doses a few days preceding the expected attack, and in much smaller doses in the free interval.

As the bromide treatment must be continued for years, the ill effects of the drug must be carefully studied, that they may be avoided as far as possible. These are : 1. Disturbances of the digestive tract. These can usually be avoided by giving the medicine largely diluted in water, preferably alkaline water, at least one-half gobletful, and if the dose be large, a gobletful. 2. Cutaneous eruptions, especially acne. In some persons the susceptibility to serious cutaneous eruptions is so great as to thwart this method of treatment altogether, but usually it need not interfere with the treatment. To some extent this trouble can be kept under control by arsenic. 3. A blunted condition of the will and intellect is usually more or less marked. If this increases to a great degree, it may be necessary to temporarily diminish the dose, though there often appears to be an adjustment, and the symptoms subside somewhat without reduction of the dose. Often, after the fits have been brought under control, the patient's disposition changes ; there is great irritability, etc. But in this case, too, an adjustment seems to take place between the system and the medicine, and the unpleasant manifestations disappear without changing the dose. 4. The bromides sometimes cause impairment of nutrition, so that in badly nourished individuals it must be used cautiously. The use of cod liver oil, iron, or other tonics, and especially an abundance of nutritious food, may help us over this difficulty. The same tonic course is usually indicated in cases of epilepsy. A weak heart, or valvular disease, also demands caution in the use of the bromides. Digitalis is, in such cases, a valuable adjuvant.

Legrand du Saulle termed the bromides a muzzle for epilepsy. The term is well applied. The drug reduces the excitability of the nervous system, and thereby holds the disease in check. In the progress of the treatment we must be very careful in lessening its hold. A sudden withdrawal of the drug is very likely to be followed by a return

of the fits, sometimes in large number. Acute diseases sometimes necessitate a reduction or entire suspension of the drug, but, fortunately, convulsions are less likely to occur at such times. When the condition of the patient or the effect of the drug makes it necessary to reduce the dose, the decrease should be substituted by some other drug having anti-convulsive properties. Some of these I have already mentioned, the most valuable of which is belladonna. Chloral has been highly recommended by Seguin³ as a partial substitute for the bromides, and he believes it to have equal anti-convulsive powers. He substitutes from one-fifth to one-half of the bromide dose, with an equal quantity of chloral, whenever necessary to diminish the former on account of severe cutaneous eruptions or the like. He thinks that the chloral affects the cardiac nerves and cerebral cortex less unfavorably than the bromide, and that the two drugs together have a more powerful control over epilepsy than the bromide alone. He states that since using this combination he has not seen the mental disorder arise which in rare instances follows the entire suppression of convulsions.

The success of the bromide treatment is dependent on the constant watchfulness of the physician, and untiring perseverance of the patient. There are few patients who cannot bear the medicine, if care be taken in its administration; few to whom it will not be of some benefit; while in a large per cent. of cases it will prolong the interval between the attacks to such an extent as to lead to a practical cure, and in rare instances an actual cure is effected. Failures are commonly due to lax methods on the part of physicians, to inattention to details, or to lack of perseverance on the part of patients, who require every encouragement to carry them over the many difficulties and disappointments obstructing the way to improvement or cure.

I will add a word as to the different kinds of bromides. Bromide of potassium is the form most commonly in use, and has a strong controlling power over the disease, but

³ N. Y. Med. Jour., Apr. 5, 1890.

bromide of sodium is selected in preference by many physicians, because it produces less irritating effects on the digestive tract, and less depressing effects on the heart. A common mode is to administer a mixture of the three bromides of potassium, sodium and ammonium. It has been supposed by some that the efficacy of the preparation was according to the proportion of bromine present, and as the soda salt has 77.7 per cent., and the potash salt only 67.2 per cent.; the former should, therefore, have greater efficacy than the latter. But this can not be held as a safe rule. For instance, the bromide of gold, whose efficacy in epilepsy has recently been lauded by a number of St. Petersburg physicians,⁴ contains only 55 per cent. bromine, and is given in but 1-6 to 1-5 grain doses. A few years ago bromide of nickel was highly recommended by DeCosta,⁵ as having very favorable effects in 5 to 10 grain doses, and being very well borne by the stomach. In the hands of some other observers⁶ the drug did not have equal success.

I will speak very briefly of a few other drugs, of which more or less favorable results have been reported very recently.

Borax has been brought forward in medical journals by quite a number of observers in the past year, though it is not new in the treatment of epilepsy. The most extensive article on the subject is by Taylor and Russell,⁷ in the *Lancet* of May, 1890. They obtained favorable effects in twenty cases, in doses varying from 10 grains to a drachm, though, they think, a 30-grain dose need not be exceeded. They found the continued use of the drug liable to produce ill effects, which may necessitate a suspension of treatment. These are chiefly, cutaneous eruptions, cracking of lips and peeling of the tongue, disturbances in the alimentary tract, and impaired general nutrition. These difficulties may be in part controlled, if not averted, by administration of arsenic and cod liver oil, and large dilution of the drug.

⁴ Med. Record, 1890. p. 183.

⁵ Med. News, 1883, p. 337.

⁶ Bourneville, Le Progrès Médical, 1889, p. 497.

⁷ The Lancet, May, 1890.

Finley,⁸ Folsom⁹, Stewart,¹⁰ Diller, Bury¹¹ and Hill¹² have also reported favorable results, while Jones,¹³ who tried it in ten cases, and Pomeroy,¹⁴ in twenty, report complete failures. But both the latter applied the remedy to inmates of insane asylums—very unfavorable subjects for treatment. My own experience with this drug is not large. A number of years ago I tried it in some dispensary patients, but they soon disappeared from view. Within a few months I have prescribed it in quite a number of patients, with apparently favorable effects, but the time is too short to give any reliable information. The same is true of the reports above referred to. They can only be deemed incitives to further and longer continued trial of the drug.

Wildermuth¹⁵ has recently made extensive observations with amylene hydrate. His results were not favorable to its continued use in the treatment of epilepsy, but he found it to be unusually valuable in the status epilepticus.

Antipyrine and antifebrine have also been much employed in such cases, and with quite varying results. In my own hands, I have found them of some value in lessening the number of fits.

Among other drugs I will only mention simulo, osmic acid, and nitro-glycerine, which have been tried without much encouragement for their future use.

We may learn to look upon any of these drugs as reliable remedies, if, as is true of the bromides, they are able to hold the epileptic seizures in check indefinitely. It is even possible that some of them have a specific curative power, in special cases, in a way we do not understand.¹⁶

⁸ *Neurolog. Cent. Blt.*, 1889, p. 27.

⁹ *Ibid.*, 1887, p. 116.

¹⁰ *Brit. Med. Jour.*, April, 1890.

¹¹ *Canada Lancet*, August, 1890.

¹² *Med. News*, 1889, p. 512.

¹³ *Boston Med. and Surg. Jour.*, 1890, p. 36.

¹⁴ *Ibid.*, p. 119.

¹⁵ *Neurolog. Cent. Blt.*, 1889, p. 451.

¹⁶ Thomson's suggestion (*Journ. of Nerv. and Ment. Disease*, 1890, p. 246) that epileptic attacks are often due to absorption of ptomaines in the digestive tract is worthy of consideration in this connection.

But, at least, it is probable that some of these remedies may be of value in assisting the bromide treatment, either in the way of substituting the bromides temporarily, or being used in conjunction with them. Amadel¹⁷ seems to have proven the value of the combination of remedies. He combined the bromide with antipyrine, and no convulsion was observed in four months in the asylum at Cremona.

One word as to prognosis. The disease is usually the more amenable to treatment the shorter its duration and the fewer the number of attacks. Cases with only nocturnal attacks are usually more favorable than those with diurnal attacks, and those of *grand mal* more favorable than *petit mal*. Cases of *petit mal*, and especially, those with mental symptoms, are, usually, very intractable to treatment.

I must again emphasize, especially in connection with these cases, more difficult of management, the importance in each instance, of seeking, and where possible removing, reflex sources of irritation, and especially, applying the general treatment before mentioned.

We cannot complete a review of the present treatment of epilepsy without referring to its surgical treatment.

Some operative measures, such as laryngotomy, ligature of the carotids, indiscriminate castration, the amputation of a part where the aura began, fortunately belong to the past and need no further mention. Other surgical operations, which fulfil causal indications, such as the removal of cicatrices, of carious teeth, diseased bone, etc., also need no further mention.

Ligature of the vertebral arteries, one or both, first performed by Alexander, of Birmingham, 1880, deserves passing notice. So far as I know, the operation has been made by four operators in 39 cases. Of 35 cases collected, and mostly operated upon, by Alexander, he reports 8 cured, 11 improved, and 16 unchanged. Recently, Roman v. Baracz¹⁸ reported four operations, and highly recommended the operation, though his own cases were reported too early to draw any conclusions from them. He thinks the results

¹⁷ Journ. Nerv. and Ment. Dis., 1890, p. 550.

¹⁸ Wiener Med. Wochenschrift, 1889, No. 7.

obtained may be due to including the sympathetic in the ligature, as the pupil is found to be contracted, and sometimes ptosis occurs on the side of the ligatured artery. Krüdener¹⁹ has concluded, from a number of experimental observations, that ligature of the vertebral or carotid arteries does not lessen the irritability of the cerebral cortex.

The surgical treatment of epilepsy comprises chiefly the operations about the head. Trephining for epilepsy is one of the oldest operations of surgery. At one time this was resorted to in any or all intractable cases. But these indiscriminate operations brought the procedure into discredit, so that for a long time it fell almost into disuse. It is again becoming more in vogue in recent years, and clearer ideas entertained as to its object, yet without the formulation of any distinct principles to determine its performance.

The success of this operation must be determined by experience, but the variance here is remarkable. Some of the best surgeons have been unable to report any cures. Thus von Bergman,²⁰ certainly an able and skilful operator, has obtained no complete success in any of his cases, while Walsham²¹ has carefully collected the reports of 82 cases, of which 47 were pronounced cured, and 13 improved. Others have collected tables in which the percentage of cures was much higher. The reasons for these great differences are that favorable cases are much more likely to be reported than unfavorable ones, and that the reports are usually made too early to permit of any definite conclusion. It has already been stated that any operation may cause a temporary disappearance of convulsions; so that immediate improvement can not be attributed to the curative power of the trephine. The convulsions must have been absent a long time before a cure is pronounced. Horsley gives five years as the limit, and even this lapse of time may not suffice for some cases, though a much shorter one might satisfy us in many instances.

¹⁹ *Neurolog. Cent. Blt.*, 1890, p. 174.

²⁰ *Surgical Treatment of Diseases of the Brain.*

²¹ *St. Bartholomew's Hosp. Reports*, vol. xix.

These strictures on ordinary reports are called for lest the latter should lead us to believe that operations accomplish very much more than they do, and should lead to their too indiscriminate resort.

While in very bad cases even a temporary benefit is not to be despised, and in the present incomplete state of knowledge an operation, without clear indications, in a desperate case can not be condemned, yet it is to the interest of science that such operations should only be made where clear indications are present. The facts that a capital operation is always a very grave matter to the patient and his family, that it is possible for such an operation to make the patient's condition worse, and that failures are likely to throw discredit on the operation, should lead us to the just-mentioned conclusion.

Then what are the indications for such operations ?

The great majority of cases in which trephining is now resorted to are cases of traumatic epilepsy. Of this class, those cases must be considered appropriate for operation, in which there are circumscribed lesions, whose seat can be determined, and which are capable of removal. Thus defined, the operation has a very distinct and definite purpose—the removal of a source of irritation.

The lesions may or may not be found immediately underneath the seat of the trauma, and lesions in the cranial cavity may or may not be attended by apparent injury in the scalp or skull. Felizet's experiment with a skull filled with paraffine, in which a fall from a moderate height caused a flattening of the paraffine without fracture of the skull, shows how injury of the brain may be produced without apparent change in the bone. The experiment shows that the skull can be momentarily depressed and regain its former shape. The lesions which may be found in these cases are, besides cicatrices in the scalp and skull, adhesions between the membranes, gross meshed, cystoid scars, filling up flat, cup-shaped depressions on the surface of the brain; thin, rusty-colored, connective tissue layers, and thick sclerosed, and dense plaques in and on the cortex; splinters of the in-

ternal table, incorporated with the tissues underneath, and penetrating foreign bodies of all kinds.²²

To ascertain the seat of the lesions, two orders of symptoms are applicable ; firstly, the local symptoms or signs ; secondly, the nervous, or more properly, cortical symptoms. The local symptoms, apart from the cicatrix or depression in the bone, are local pain and tenderness, sometimes reflex symptoms, even convulsive movements or fully developed convulsions produced by pressure over the lesion. The mere recognition of the cicatrix or depression in the bone need not point to the intra-cranial source of irritation. A case of Denous²³ is very instructive. A fall on the head was followed by paralysis of right leg and left arm, a paresis still remaining, when, at the end of two years, left-sided convulsive seizures occurred. There was a cicatrix in the scalp, also a depression of bone on the left side of the skull, but D. paid no attention to these, trephining over the centre of the right fissure of Rolando. The remains of a linear fracture were found, and underneath this a meningo-encephalic collection. The operation resulted in a cure of the convulsive seizures and left-sided paralysis, the paralysis in the right side remaining as before.

The cortical symptoms may be monospasm (Jacksonian epilepsy) monoplegia, aphasia, irritative or paretic, sensory, ocular or aural symptoms, etc., according to the seat of lesion.

The object of the operation should be the removal of the source of irritation, the extirpation of the entire area of disease. In some cases the cicatrix in the scalp or skull may be the only offending parts, and their removal answer the indications, though such cases are, doubtless, rare. Usually it is necessary to proceed much further, often to remove, in connection with the cicatrix, surrounding diseased tissue in the brain substances. Horsley gave the direction toward this more radical treatment of brain lesions, which gives the promise of more favorable results.

²² Von Bergman. *Surgical Treatment of Diseases of the Brain.*

²³ *Ibid.*

Those cases seem more favorable for a complete cure where the epilepsy is of the Jacksonian type. There is a greater probability in such cases that the lesion is circumscribed that it can be found, and that the epilepsy has not yet become fully engrafted in the nervous system, to retain its existence even after its original cause is removed. Probably it is because of the latter condition that the convulsions so often continue to appear, notwithstanding the operation; especially may we believe this to be true when the convulsions have been of the type of ordinary epilepsy.

For the same reason there is much more probability of success if the operation be performed soon after the injury than when performed at a late period.

For non-traumatic epilepsy, trephining should only be resorted to in cases of the Jacksonian type. In these cases it may be taken for granted that a lesion, whether demonstrable or not, is in the motor area of the member wherein the spasm begins. It is, therefore, theoretically probable that the removal of this lesion may cure the disease. A number of such operations have been made.

Horsley²⁴ removed the facial centre in a boy of ten, somewhat demented, having from three to six epileptiform attacks daily, the attacks beginning at the left angle of the mouth, with some improvement as to the frequency of the attacks. Lloyd and Deaver²⁵ removed part of the arm and face centre in a man of thirty-five, with frequent daily attacks, beginning in the left index finger. The patient remained under observation nine months, during which time he had about ten convulsive seizures. Keen,²⁶ Naudcrede,²⁷ and Von Bergman,²⁸ also removed cortical centres for the cure of epileptic or epileptiform seizures, with "signal" symptoms pointing to the extirpated centres as the

²⁴ Brit. Med. Jour., Apr. 23, 1887.

²⁵ Jour. of Nerv. and Ment. Disease, June, 1889.

²⁶ Amer. Jour. of Med. Sciences, 1888, p. 452, and Wood's Reference Handbook, viii., p. 222.

²⁷ Med. News, 1888, No. 24.

²⁸ Surgical Treatment of Disease of the Brain.

seat of disease ; but in all these cases the epilepsy had more or less the character of traumatic epilepsy. In Keen's and Von Bergmann's cases there was some favorable modification of the disease, though the attacks continued to occur, with lessened frequency. Naucrede's case was only under observation three weeks after the operation, during which time no convulsion occurred.

In all these cases, except Von Bergman's, just before the removal of the cortical centre, its location was ascertained by applications of the faradic current. In all the cases a corresponding paresis or paralysis followed the removal of the centre, but, with the lapse of time, disappeared to greater or less extent.

It is yet too early to say whether such operations are to have a future. In the cases operated upon not all was accomplished that had been hoped for, and the possibility of doing harm cannot be overlooked.

ANÆSTHESIAS OF HYSTERIA.

This subject is considered by Dr. C. L. Dana in the "American Journal of Medical Sciences" for October, 1890. The characteristics of hysterical anæsthesia are :

I. Its frequent presence in the retinal field, and its peculiar distribution here.

II. Its distribution on the skin, affecting first the pain nerves, and its modification, disappearance, or transfer by metals, or suggestion, or cutaneous irritants.

III. Its peculiar involvement of the auditory nerve, causing deafness in high and even low tones, and dulling the hearing generally.

IV. The rarity of muscular and articular anæsthesia, except in connection with profound paralysis.

V. The involvement of the taste and smell.

The thirteen cases recorded well illustrate the four points in regard to hysteria that modern research has tended to bring out and emphasize :

The comparative frequency of the disease in men ; the common characteristics of the disease, whether caused by shock or trauma, local irritations, or general depressing influences ; the presence of some of the objective symptoms or stigmata of the disease in all cases ; and the combination of true hysteria with organic disease.

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