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THE CONDITIONS OF CONSCIOUSNESS IN THE EPILEPTIC ATTACK AND ITS EQUIVALENTS.

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In 1886 I published in Dr. Jewell's *Neurological Review* a paper on "Consciousness in Epilepsy," in which I reported several cases where more or less complete recollection of events during the epileptic convulsion and the post-epileptic furor was preserved, together with other evidences of retained consciousness in the grand mal, and discussed the general question of the mental condition in the epileptic attack. Since that time other papers have been published covering, to a greater or less extent, the same ground, but there seems to be still room for more, especially as the same statements are met with, even in recent text-books, that loss of consciousness is an essential feature of the epileptic attack. I propose, therefore, in this communication to reproduce, in part, my former paper, to again give the cases before reported by me, together with others since observed, and to discuss them in relation to certain important points that were also more or less touched upon in the prior publication.

There is no doubt that, to the average physician or student of medicine, the conception of the epileptic attack still includes the notion of a loss of consciousness, at least in the fully developed grand mal and in what is called idiopathic epilepsy. The comparatively recent text-book of Dana states that "idiopathic epilepsy is a chronic functional disorder characterized by periodical seizures, attended with loss of consciousness and usually with convulsions." In the description of the attacks unconsciousness is given as a constant feature, both in the *grand* and *petit mal*. Gowers says the grand mal consists of attacks of unconsciousness with convulsions. Osler, in his practice of medicine, states that epilepsy is

This One



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characterized by attacks of unconsciousness, with or without convulsions. It would be useless to recapitulate here all the authorities who make this the characteristic symptom; they comprise probably the majority of those who have written on the subject. Of the more recent authors a few have, like L. C. Gray, qualified the definition so as to include the possibility of consciousness being retained, but the most even of these make no exception of its absence in the fully developed attack.

On the other hand numerous authors, even among the older ones, have recognized the fact of the retention of consciousness, and we can probably say with truth that the majority of those who have written especially on this disease speak of the possibility of only a partial loss of consciousness in some forms of the attack, and some authors have dwelt especially on this feature. For example, as far back as 1852 Herpin* defined epilepsy as a "chronic disease characterized by irregular periodical attacks of general or partial convulsions, with loss or simple disturbance of sensibility and consciousness." A year later Ludwig Meyer† called attention to the fact that consciousness was at least partially retained in certain varieties of the seizures, and in 1854 Delasiauve‡ qualifies the statement that consciousness is lost with the adverb "usually," and practically the same admission is made by Hoffman, the younger Falret, in his classic memoir, and hosts of modern authors, some of whom call special attention to the retention of consciousness in some of the minor attacks.

Among the more recent authors who have claimed the retention of consciousness in the major epileptic attacks, I may mention B. C. Ingels,** Hazard,†† Hughes,‡‡ C. W. Clarke,§ and more recently Bombarda,¶ who have all called attention to this possibility, and here and there mention of the same may be met with in other recent publications, as for example Nancrede,|| who mentions a case in which the patient claimed to have recollection of what occurred while he was in a sort of status epilepticus, not, however, giving him full credit. He says, in fact, that this can not

* Du pronostic et du traitement curatif de l'épilepsie, 1852, *Schm. Jahrb.*

† *Charité Annal.*, iv, 1853, *Schm. Jahrb.*

‡ *Traité de l'épilepsie*, 1854.

** *Bull. Soc. de Med. de Gand*, 1860, xxvii, 335-340. Cas d'épilepsie remarquable par la conservation de l'intelligence et de la sensibilité pendant les accès.

†† *St. Louis Med. Record*, vii, 131, 1880-81.

‡‡ *Alienist and Neurologist*, 1881, 236.

§ *Alienist and Neurologist*, 1881, ii, 400.

¶ *Rev. Neurologique*, 1894, No. 23.

|| *Annals of Surgery*, October, 1896.

be very well proven, and hints his disbelief in the competency of the patient's testimony. The facts of partial epilepsy, however, in which consciousness is admittedly preserved, and the modern theory that all epilepsy is cortical, and only varies in the extent and intensity of the morbid process, the discharging lesion, ought to have as its corollary the presumption that it is impossible to define the limits where consciousness ceases or begins. We do not, according to the best modern conceptions of the condition, consider epilepsy as in itself a disease, but only as a symptom, though it may be the only one, of an organic cortical disorder, consisting essentially in a nervous instability. The cortex is not one organ with a single well-defined function; it is the microcosm, as it were, of the whole organism and has for a further function the apperception, for want of a better word, that constitutes our consciousness. We see in partial, or Jacksonian, epilepsy the purely motor convulsions. There are also sensory epilepsies that do not involve consciousness, and, as I hope to show also, purely mental epilepsies in which not only consciousness at the time, but memory afterward, of the details of the attack, are retained without serious or general impairment.

There are, besides those I have mentioned, few authorities that recognize the possibility of the retention of consciousness and memory in the fully developed grand mal. The reservation that the consciousness is retained is usually meant to apply to the partial attacks and to some of the less well-defined conditions that are now considered epileptic, and included under the general head of epilepsy. The late Dr. Russell Reynolds* speaks more cautiously than any other of the older writers I am acquainted with when he says that the grand mal is, in the vast majority of instances, invariably attended with loss of consciousness. It would seem that in his large experience or observation that he had seen some case or cases that led him to doubt the absolute correctness of the popular view. It is not often that instances come under observation that would lead us to suspect or admit that the patient was aware of his surroundings or conditions during the severer forms of epileptic attack, yet there have been such published by several of the authors named, and it is probable that with closer and more numerous observations there would be many more recorded. The evidence may be both objective and subjective, and if an epileptic claims that he was aware of his surroundings in the fit, and his statement

* System of Medicine, lli, p. 303.

is confirmed by the actual occurrences having been as he relates, and no possible way by which he could learn of them, except by his personal observation, exists, it would seem that the evidence should be sufficiently convincing. Even if, with later total amnesia, it is possible to detect signs of attention and perception in the patient, the fact is in a measure established. The epileptic attack varies in different patients, and sometimes in the same patient, all the way from the simple aura to the complete series of tonic and clonic convulsions and coma. The aura alone is not an uncommon phenomenon, and is, of course, unaccompanied with any loss of consciousness. A patient once described a form of attack which she had several times a day, as a sensation of something rising from her stomach to the top of her head, where it ceased with a sort of explosion, as if a pistol had been fired off in her head. Another patient who had lost a portion of his frontal bone, leaving the brain covered only with a soft tissue, could be made to experience a typical epigastric aura any time a slight pressure was made over the scar, and if the pressure was increased he described his feeling "as if he was going to die," probably a premonition of impending loss of consciousness. Undoubtedly a complete attack could have been brought on by continuing the pressure, and it would have been interesting in that case to note just when and how the consciousness apparently disappeared. I never felt justified, however, in carrying the experiment so far, the less so inasmuch as his epileptic attacks were generally of a rather severe type, and a fatal issue was an apparent possibility in any one of them.

The actual cases reported of consciousness during the major epileptic attacks are very few in number. Most of the cases have been of more or less partial epilepsy, or of irregular attacks, which hardly reached the full development of the *grand mal*. One of Hughes' * cases is especially interesting, however, inasmuch as the consciousness, lost at first, reappeared before the convulsive stage began, during the whole of which the patient seemed to have knowledge of himself. Another case reported by Clarke seems to have been a condition of continuous irritation of the motor cortex, a sort of modified status epilepticus, in which the patient was in convulsions for many hours, but perfectly conscious all the time. I have found, indeed, no really typical cases in the literature, unless it be that of Kunze, † which I know only by title, and that of Bombarda, ‡ in

* *Weekly Medical Review*, February 5, 1887.

† C. F. Kunze, *Epilepsia gravior mit Erhaltung des Bewusstseins während der Anfälle. Allg. Wien. med. Ztg.*, 1882, xxvii, 461.

‡ *Revue Neurologique*, 1894, No. 23.

which the patient complained of the manner in which he had been handled during the attack, showing thus a sort of distorted recollection, which that author thinks may, in other cases, be the origin of certain complaints of epileptic patients. It is highly probable that in some stage of every fully developed grand mal attack there is a serious disturbance or loss of consciousness, but that this exists throughout the attack is unprovable. In the modified attacks, such as make up the syndrome of most cases of status epilepticus, and which are so often observed occurring isolated from any other symptoms, it is very possible and, according to evidence, fully probable that consciousness may sometimes be retained. Thus in Bombarda's second case the convulsions were slight, rather more like a violent tremor of the rigid muscles than complete convulsions, and the subject was able to state what occurred during their continuance, and was heard to say at the close, "It is finished." It is also of this class of cases, in part at least, that Schroeder van der Kolk says, in his memoir on epilepsy:* "In some cases, of which I have observed several examples, no loss of consciousness takes place, but a few contractions set in suddenly in the face and spasms along the back, with more or less change in respiration, while the spasms may even extend to the extremities. In these cases it is only occasionally that perfect attacks of epilepsy with loss of consciousness occur." These remarks do not apply exactly to petit mal or partial epilepsy, but rather to the imperfect attacks I have alluded to, and it is a little remarkable that so old an observation by so high an authority should have attracted so little attention. The dominance of the fixed conventional notion of epilepsy, however, as a disease characterized by loss of consciousness is probably sufficient to account for this neglect.

Another peculiar type of imperfect epilepsia major was noticed in my former paper, and I here reproduce the account of the case, which is unique in my own personal observation. I have, moreover, not found any exactly corresponding to it in the literature of the subject:

"I have a patient now under observation who has, besides occasional complete attacks, sometimes as many as twenty or thirty modified attacks in a day. In some of these he simply grasps whatever is near him, and has a few slight general or local convulsions, but in others he utters the peculiar epileptic cry and falls, and for a few seconds is, to all appearance, in the first stage of the *grand*

* Morris Transl., 1859 (orig. 1858), p. 11.

mal; then, after a few seconds of general clonic convulsions, he rises and can tell everything that happened about him while he was convulsed.

"In the only instance when I had an opportunity to satisfactorily observe, the pupils were dilated. There is clearly in some instances no loss of consciousness or mental obfuscation whatever. He can state who stood by, who took hold of him, and the whole order of the events of his attacks and its surrounding, as well as any of the bystanders; he does not even become mentally excited by its occurrence. His disorder is not apparently very tractable to bromides or other remedies, but sometimes he will go weeks without any fits and then again he will for weeks have as many as fifteen or twenty a day, and as yet there has been no marked general mental deterioration. The epileptic explosions seem to involve the motor functions of the cerebrum almost exclusively, leaving those of the intellect nearly unimpaired. He is intelligent, not especially emotional, and is well dispositioned, and can give clear accounts of his own subjective feelings in these attacks. He says that they always commence with a peculiar sensation in the epigastrium, which he seems to be unable to describe, and which rises to his head. He says he feels then as if his blood had ceased to circulate, as if smothered, and he thinks that his convulsions are the involuntary efforts to relieve this smothering sensation. He says, also, that on coming out of these attacks, while perfectly conscious of what he is saying, he has no control over his words, and he is sometimes very much mortified by those he uses. It is quite noticeable that while sometimes he speaks quite rationally on coming out of his convulsions, on other similar occasions what he says seems entirely irrelevant, and he is afterward perfectly aware of the language he has used, and yet can give no account of any idea in his mind to which it corresponded. It is not easy to satisfactorily explain this phenomenon; possibly there may have been under or behind his usual consciousness, which seems unimpaired, some more rapid intellection or unconscious cerebration, which leaves no impress on his memory. An epileptic automatism like this, with perfect apparent consciousness, is rather noteworthy.

"These attacks during the period in which they are frequent are something incited by the least excitement or agitation, and it was found inadvisable to keep this patient in a ward with many other epileptics, as he occasionally had a fit whenever another patient had one. In these he was very liable to injure himself, and on one

occasion he was rather severely burned on a steam coil which was exposed under the basins in the wash room of the ward. The fits are nothing like any form of hysterical attacks, and indeed there is no suspicion of anything of the kind. I have another epileptic patient under observation whose attacks are sometimes almost identical in appearance with these, but who loses his consciousness in them completely.

"These attacks in this patient differed from the ordinary complete grand mal in their short duration and the slight after-effects, and it should be stated here that in his other severer spells the attack was of the most pronounced grand mal type, and on the one occasion observed was alarming, even to one accustomed to seeing epilepsy major in all its phases. The congestion and asphyxia seemed to even threaten life, and the subsequent prostration was correspondingly severe."

Another patient observed since that paper was written, a boy about twelve years of age, also exhibited some rather remarkable peculiarities in a sort of status epilepticus which lasted several hours. The fits were of the modified type already referred to as often occurring in this condition, the period of tonic convulsion and tremor well marked, but the clonic contractions slight and of short duration. The attacks succeeded each other rapidly, with very short, if any, intervals, but there was no question as to the retention of consciousness during at least a large part of the time, as there was a perfect recollection of remarks made in his hearing, and of events on the ward during his attacks. He would endeavor, also, to answer questions, and once, while in a spasm, asked distinctly for a drink of water. He claimed to have been perfectly conscious during the greater part, at least, of the time the attacks lasted, and there was satisfactory objective evidence of the fact.

The case reported by Dr. Nancrede * has been already referred to. Dr. Nancrede says he does not know how the patient's statements can be proven, or that they ever will be proven, but in the light of my own observations of the above-described cases I should rather be inclined to give them some credit. It may be said that these attacks were hysterical rather than epileptic, but I can say in reply to this that there was nothing in any of them justifying that diagnosis. While retained consciousness has been made a diagnostic criterion between hysteria and epilepsy, this distinction is purely arbitrary and is merely based on the assumption that

*l. c.

unconsciousness is the essential characteristic of epilepsy. The facts of partial epilepsy due to recognized organic disease are themselves sufficient to destroy this assumption as applying to all cases, and the recognition of late years that practically all epilepsy is cortical has destroyed the distinction between Jacksonian and general epileptic attacks. The severity and generalization of the convulsion depend upon the extent of the brain surface involved and the implication of the various centers. We do not know the seat of consciousness in the brain, or the mechanism connected with this function, but we know that large portions of the cerebrum may be involved in injuries or in morbid processes without materially affecting it. The intensity of the disturbance in epilepsy, its explosive character, may conduce to disturbances in the conscious ego, even when the extent of the functional lesion alone would be insufficient, but this is also only a matter of conjecture. Our knowledge of psycho-physiology will have to be considerably enlarged before we can do anything more than speculate as to the limits within which consciousness is uninvolved, and there may be conditions and idiosyncrasies affecting each special case.

As regards the existence of any conscious mental condition in the fully developed grand mal, I have found very little in medical literature. The case of Kunze, as I stated, may be such a one, but I know it only by its title, having seen neither the original nor a satisfactory abstract. It is possible, I believe, that there may be major epileptic attacks in which consciousness may be only impaired, or be wholly retained, for a portion, at least, of the time, but such instances must necessarily be exceptional. I here reproduce, as bearing most closely on this question, an extract from my former paper giving an account of what seemed to be such a case. At the time of that publication the cortical theory of epilepsy was not so generally accepted as at present, and Jacksonian epilepsy was still considered by many as a pathologically distinct variety:

"Out of all the observations of the epileptic attack that I have personally made I offer the following one, which, I regret, is not more complete, as having an apparent bearing on this point. The patient was under my care but a very short time, and I only on one occasion had an opportunity of observing him in his fits.

"J. A., aged 24, an able-bodied but rather stupid epileptic, was admitted to the Illinois Eastern Hospital for the Insane March 4, 1885. There was no history of his case received with him beyond the mere statement that he had been for some time an inmate of a

county almshouse, where he had been considered a harmless epileptic. He answered simple questions about his bodily wants rather rationally and readily enough, but he was incapable of any lengthy or connected conversation, or of giving any adequate account of himself. His fits were not infrequent, occurring usually in the daytime, and, as stated to me, they were usually of the typical grand mal type. He was only a few days under my care, as he developed a double pneumonia shortly after his admission and was removed to an infirmary ward in charge of another physician. It thus happened that only one of his attacks came under my personal observation. I came upon him just as he was in the stage of general spasm, involving all the members and the muscles of the trunk, but I saw that his eyes were open and moved about as if taking notice, and when, incited by this symptom, I called his name sharply, he turned his head toward me with an actually intelligent expression as if conscious. I repeated this experiment several times, but always with the same results. The patient was a long time coming out of the attack, and while, to all appearance, after the convulsions ceased, he lay in an apparent stupor, I can not say that all the while the same condition of semi-consciousness, or at least a sensibility of the higher reflex centers, to the extent perhaps even of the lower grades of intellection, was absent at any time. The case was noticed as a peculiar one in these respects by the attendant on the ward, who said that in his experience of a number of years in caring for epileptics in insane asylums he had never seen one like it. After the patient's death, which occurred within three weeks of his admission, the autopsy revealed an acute meningitis of the convexity of the hemispheres, which, though not then diagnosed, may have existed to some extent at the same time the above observation was made. * * * The case appears to me to be of interest as indicating, so far as it goes, that even general epileptiform convulsions, closely resembling the ordinary epileptic attack, may not be necessarily attended with loss of consciousness, or at least of a high grade of sensibility closely allied to, if not exactly identified with, that condition. I have seen no detailed description anywhere in medical literature of an instance like the above, where, with general spasm of the trunk and limbs, there was yet an apparently voluntary or semi-voluntary control of the muscular apparatus of the head and neck, with apparently intelligent reaction to mental stimuli. I regret very much that I could not observe the case a longer time and more closely, and that his mental condition in the

intervals between his attacks was not such as to allow of some satisfactory testimony as to his subjective sensations."

A somewhat similar case was described to me by Dr. Munson, superintendent of the Northern Michigan Asylum at Traverse City. The patient was a Finn, who was sent to the asylum in a very demented condition, and without any history. A few days after his reception he had a series of fits, consisting of clonic spasms and opisthotonos, repeated at short intervals for nearly an hour, and leaving him in a very excited panophobic condition. During the spasm the cardiac action was very irregular, there was a peculiar inter-osseal flexion of both hands, and apparently much distress in breathing, and pain in back and head. The order of the convulsions was first tonic, then clonic, followed by general tremor and rigidity, but during the whole time he was evidently conscious, and could answer questions sensibly, the muscles of articulation being uninvolved. These attacks were repeated at intervals of a few days, until, under pretty full doses of bromides, they ceased altogether, and the general mental health improved.

The above facts are not as conclusive as I could wish, as there was a certain irregularity in the form of the attacks from the typical major epilepsy, and, at least in the case observed by myself, no subjective testimony could be obtained. This, however, could at best be only confirmatory, for in such a case objective evidence of consciousness is most valuable. The definition of consciousness in these cases is so uncertain that some may cavil at the evidence, but anything that clearly indicates perception and attention is, to my mind, sufficient evidence in such a case of mental functioning worthy of the name of consciousness, whether or not it be subsequently remembered. Full normal intellection is not justly to be demanded in any such case; the nervous and muscular tension of the fit must necessarily tend to a certain confusion, even when consciousness, in the full, proper sense of the term, still exists.

The reason that other similar cases have not been often reported is, I believe, to be found that comparatively few have observed carefully a large number of epileptics in their attacks. This, indeed, is only possible where they are gathered together in an institution under observant attendants, who are constantly with them, and who can call the physician's attention to unusual phenomena. It is manifestly impracticable in private or general practice; indeed, Dr. L. C. Gray* frankly states that while he has probably

* Nervous and Mental Diseases, 1st ed., p. 384.

treated thousands of epileptics he can easily count on his fingers all that he has observed during the attack itself. My own experience would not equal his, but I have spent many hours on epileptic wards, and have witnessed hundreds of attacks in many different individuals.

Passing now to another order of epileptic phenomena, the so-called psychic equivalents and certain other mental disturbances connected with the epileptic attack, the question of the retention of consciousness has more than a merely medical interest; it suggests the question of responsibility for acts committed in these conditions, and has, therefore, a very decided forensic importance. This fact has, I believe, obscured the scientific side of the question, and led to the acceptance of views that would otherwise have been rejected by medical men. It has also led to the use of a very indefinite and unpsychological conception of the term consciousness that can hardly be seriously defended, one including in the term only acts that are consciously recollected by the doer. As a sample of this use of the term I will quote from Hughlings Jackson,* who devotes quite an article to demonstrating mental automatism and unconsciousness as invariable elements in these conditions. Dr. Jackson says: "It is convenient to have one name for all kinds of doings after epileptic fits, from slight vagaries up to homicidal actions. They have one common character—they are automatic; they are done unconsciously, and the agent is irresponsible. Hence I use the term mental automatism. I say mental, as the doings are probably external signs of crude mental states—external signs of epileptic dreams." Dr. Jackson does not, in this article, admit the possibility of a true psychic equivalent, but assumes that in all cases there has been a transitory, though it may be undiscoverable, epileptic paroxysm before the maniacal attack. His idea of mental automatism, therefore, covers all those forms included by other authorities under the heads of psychic equivalents, grand mal, intellectual epileptic mania, larvated epilepsy, etc. Among more recent authorities who have emphasized this view I may mention J. Christian,† and at least one or two of the experts in a recent notable murder trial in this country. In nearly every case they speak of consciousness as lost or seriously impaired in the epileptic furor, and the most that is ordinarily admitted is an amnesia, implying in itself a weakened condition of consciousness, or,

* West Riding Lunatic Hospital Reports, v, 1875, p. 110.

† *Jour. Ment. Sci.*, January, 1891.

at most, only a dreamy or somnambulistic consciousness, which leaves little or no impression on the memory. It is apparently assumed by all these authorities that loss of memory of the acts performed during a particular time implies a weakened condition of consciousness during that period. This is the explanation given by Ribot,* who uses the fact of epilepsy as giving the clearest examples of temporary amnesia. By him, as well as by Hughlings Jackson and the majority of medical writers, the mental state in these cases is compared to and considered similar, or even identical, with that of a dream, and thus Dr. Jackson speaks of the coördinated acts of these epileptics as "the external signs of epileptic dreams."

The mere fact that memory is lost of the event within a certain period of time is, of course, not conclusive evidence that consciousness was diminished during that period. The assumption that it is weakened during these epileptic conditions must receive all its valid support from objective clinical symptoms, not from any *a priori* consideration. These symptoms are numerous enough in most cases, but they fail in some. Not only do epileptics in their so-called automatism do many coördinated and seemingly rationally purposed acts, apparently requiring the retention of all their faculties, but they sometimes seem to retain a recollection of the events of their normal condition in their abnormal stage, of which itself they are afterward altogether amnesic. Thus one of the principal points upon which stress is laid by Echeverria† is the fact that "unconscious" epileptic violence is often prompted by pre-existing ill-will, and I have myself noticed in the complex act of the epileptic furor numerous evidences that there were, so to speak, mental reminiscences of the prior normal condition. In the curious history of Felida X., given by Azam, which has been often quoted, the patient was in her abnormal condition, which was in some respects comparable to an epileptic state, perfectly conscious of her whole past life, and was generally in a much more satisfactory state of mental and bodily well-being than she could be said to be in the other, though normal one. In this case at least the consciousness in the abnormal state was as complete and full as it could be in the usual normal life of the subject.

There is much force in the argument that consciousness in a condition where, with apparent realization of the present surroundings

* Diseases of Memory, p. 75, *et seq.*

† *Jour. Ment. Sci.*, Apr., 1885.

and relations, there is also every evidence of a memory of the past, as in some cases of epileptic mania, can not be much less perfect than it is in one where only the present is realized, and all recollection of the past or a portion of the past is wanting. There seem, indeed, to be no valid reasons for assuming that amnesia by itself implies any loss or diminution of consciousness during the period the events of which are forgotten. The recollections of the whole normal past life, or a certain portion of it, may be obliterated pathologically, while consciousness of the present remains perfect, so far as can be estimated. While memory, in a certain sense, is the reproduction of a past condition of consciousness, it does not follow that because the reproduction fails the past consciousness was also wanting or impaired.

Leaving aside, however, the consideration of the condition of consciousness in the state involved in the amnesia, it is a question whether there is in all cases a complete, or even a partial, loss of recollection of the events in epileptic mania, as is claimed by most authorities. Of course any condition of excitement as intense as the epileptic furor is liable to obscure the recollection of details to some extent, but this can not be called amnesia. If there remains any more or less vivid remembrances of the leading facts during the seizure, it is analogous to the condition of memory after intense excitement in the normal individual. There are many asylum physicians, I have no doubt, who can recall cases of their own observation, of epileptic maniacs who preserved more or less complete recollection of the events of their attacks, though few have published accounts of them. Furstner,* however, in a memoir, read before the meeting of the Southwestern Association of German Alienists and Neurologists in 1885, reported a case of epileptic mania, the details of which were remembered by the patient, not only immediately but for a considerable period of time after the attack.

His consciousness appeared to be in no way affected. In the discussion that followed the presentation of the paper by the author and two other well-known German alienist physicians, Von Rinaker and Jolly, other instances of the retention of consciousness in epileptic mania were related. Ball† reports a similar case of a woman who, besides the grand and petit mal, had attacks of epileptic insanity, and of some of which she retained occasionally a recollection. He

* *Arch. f. Psych.*, xiii, p. 715.

† *L'Encephale*, 1887, p. 427.

says, in commenting on this case: "Amnesia during the attack is, therefore, not the distinctive characteristic of epilepsy. We are convinced that, in calling the attention of observers to this point, we will rapidly multiply the number of cases of the disease in which we find an exception to a rule, very general, it is true, but one that has been formulated thus far in too positive terms."

During an extensive experience with epileptics, in which I had seldom less than twenty or thirty under close daily observation, I can recall several cases that afforded what seemed to me the best of evidence of consciousness in and full recollection of the acts in post-epileptic furor. I say full recollection advisedly, as by numerous tests I convinced myself that there was very little or no defect of memory, certainly not more than would exist in a sane man under conditions of excitement. I reported these cases up to date, in 1886; and here reproduce the main facts as then stated, with such subsequent observations as bear especially on the points here discussed.

One of these patients was a powerfully built man, an ex-railway employe, whose epilepsy was due to a fall from a moving train. His mind was so far affected that he was declared insane about two years after the accident, doubtless on account of his furious seizures. Between these he was quiet and rational. At the time he came under my observation his epileptic attacks, strictly speaking, had become apparently less frequent, and were, as a rule, nocturnal, and generally were only evidenced by a slightly more irritable mental condition. He did not materially change during the time I knew him, though I thought I could see some slight deterioration, more marked in his disposition and character than in his intellect; he was hardly any more demented five years after his reception than at first, but it seemed that at times he was more irritable than formerly, and had less self-control. I say at times, for generally in the intervals between his attacks of maniacal furor he was rather quiet and civil, though a little abrupt in manner; he was also quite rational, and, when allowed to work at occupations he liked, very industrious. At intervals, varying in length from one or two to four or five months, and generally after his fits had been a little more frequent than usual, signs of disturbance appeared. The first symptoms were an unusual flushing of his face, a peculiar sleepy look, a sort of semi-hilarious tone of his voice, and sometimes a peculiar droop to his right eyelid in this stage that was particularly noticeable. At this stage there was also an acceleration of his pulse

to eighty or ninety, or more, and a very evident exaltation of feeling of power and general physical well-being, together with a very abnormally unstable temper and great irritability. During this preliminary stage he was able to control himself more or less completely, and was perfectly aware of what was coming. Sometimes he succeeded in fighting down his attacks with a very evident effort of several days' duration, and he would voluntarily stay in his room, though against his inclination, in order to avoid meeting those who might irritate him, and thus precipitate the threatened onset of his epileptic fury. Sometimes also his efforts could be aided by active purgatives and other depletory and sedative measures; but these were not found, as a rule, efficient. Generally this stage passed off suddenly, within a day or two, into the complete furor; he became more excited, and showed less and less self-control, and at last, while still apparently rational and conscious, he, all at once, would break out into a sort of wild gesticulation, stamp around the floor and roar like a wild beast, and was liable on these occasions to attack his best friend. If a sufficient force were present to assure him that resistance was useless he would usually submit to being removed to a strong room, where he generally remained from twenty-four to sixty hours, refusing food, and working off his excitement by himself in the manner above stated. During even this time he could talk rationally, if he would, and sometimes he described his own feeling, but said he could not control himself. He said that he sometimes felt as if he could whip ten men, and there appeared to be generally at these times a great exaltation of the feeling of physical power, with a very marked ferocity of disposition, but this tempered to a considerable extent, as I have often observed in epileptics, with a certain discretion, which made him, even in his most violent moment, select, as a rule, only those weaker than himself for his attacks.

The emergence from these spells was a little more gradual than their onset; he was, at times a week or more, more or less irritable and inclined to violence, and during this time, also, his epileptic attacks were sometimes more frequent, but he soon resumed his former self, and was the comparatively reasonable and rational patient again. Usually he remembered quite distinctly the events of his attack, and sometimes took particular pains to apologize for the violence he had shown and the trouble he had made to individuals, and especially mentioned the particular acts he wished to have forgiven, thus showing his recollection of the details of the attack.

He claimed, and the evidence of observation appeared to support his claim, that he could usually remember all the events of his disturbed period, and that it was only very exceptionally otherwise.

The above was the type of his usual attack, but in one instance there was a decided variation. He was ordinarily trustworthy, and as the premonitions of his attacks had never before been lacking, he had been allowed a limited parole, in company usually with another very trustworthy patient. On one of these excursions he slipped away from his companion and was next heard from at his home, some eighty miles distant, where he created a disturbance by his violent behavior, the details of which I have not been able to fully learn. He was sent for and brought back, but for two or three weeks after his return was in a peculiar mental condition, and altogether different from both his normal self and his ordinary epileptic maniacal attack. He seemed to have a complete set of delusions, and was especially violent toward certain individuals to whom he had always before been friendly, while toward others he acted much as he was accustomed to prior to his absence. As the writer happened to be one of the individuals in regard to whom he had an especial delusion, it was not advisable or convenient to stay in his presence for any lengthy period of time, but ample opportunity was afforded to notice his behavior, and to perceive that while his mental condition was altogether different from his normal state there was no lack of consciousness or judgment as regarded his relations with others, apart from his special delusions. There was a great increase of his epileptic irritability, and his condition appeared, on the whole, like a milder and more restricted and chronic or durable phase of his ordinary epileptic furor. It finally culminated in an attack on one of his physicians, in which he was only overpowered after a rather severe struggle with several attendants, and in which he almost completely exhausted himself. Then, when kindly spoken to by the doctor, he became altogether unmannered and cried like a child, and from that time he began to improve, became friendly to those he had been abusing, and rapidly resumed his normal and more amiable character. It appeared as if the fact of his having been finally overpowered, though I believe no unnecessary force was employed, had served as a very powerful stimulus to awaken his self-control, which had been so long in abeyance to his unrestrained epileptic irritability. He had before, it would appear, made no attempt to exercise his better feelings, which were perfectly capable of being aroused under favorable conditions.

Another epileptic patient, a powerful man about thirty years of age, of rather moderate intelligence, but ordinarily rational, was suddenly seized in the night, probably after a fit, with an attack of intense maniacal excitement, and began to break down the door of his room, using for this purpose the top of a small heavy stand or table that had been left in it, and which he had broken up for this purpose. He soon succeeded in getting out and was overpowered by the night watch and attendants only after a severe struggle, in which one of his captors was rather seriously injured. He seemed inspired by a sort of motiveless general ferocity toward every one about him, though he recognized them all and appeared to know his surroundings perfectly. As soon as he began to feel he was mastered, he would cry that he was being hurt and ask them to let him loose, and when this was done he immediately recommenced his attack as ferociously as ever. He had had no previous seizure like this, and had been on one of the best wards, but for several weeks after this his character was altered; he was so surly and dangerous that he had to be kept on one of the worst. He recollected perfectly the events of his seizure, admitted that he had misbehaved, said he deserved a "d—n good licking," and seemed to have a contempt for the discipline of the institution that did not permit his receiving it. Later, when he had to a great extent resumed his normal disposition, he expressed the same general opinion that he did not receive the energetic moral treatment that his case required. He seemed to consider it altogether an instance of conscious irritability, for the continuance of which he was himself partly responsible. His associations had been mainly with the rougher classes, and it is possible that his idea of his proper treatment was based on some of his former experiences. Though peculiar in some respects, his attack was characteristically epileptic in its sudden and causeless onset, in the intense fury and malignity manifested as long as it continued, and in the condition in which it left the patient for days and weeks afterward.

The sudden attacks of insanity in epileptics are not always maniacal in their character; they may take the forms of melancholic frenzy, and in this consciousness may also be retained. An epileptic patient long under observation, who was usually quite rational, though at nearly all times irritable and dangerous, broke out suddenly in the night from his sleep into a state of intense agitation and fear, shouting, praying, and screaming, clutching his throat and testicles, and generally showing evidences of extreme

mental agitation, with probably some vague bodily sensation, which he was unable to describe or locate. He could not tell how he felt, but when asked to control himself and told that we were doing the best we could, he would say he knew it, and thank us, but would go on with his noise and praying as hard as ever. Under the influence of a pretty full sedative dose by the mouth, followed later by one given hypodermically, he quieted down for the night, but the agitation and mental distress continued for two days to a very marked degree. During the whole time, and even when he was most disturbed, he was perfectly conscious and recognized that he was not right mentally; as he said himself during his agitation, "I am very crazy." I presume that full consciousness is more frequently retained in melancholic frenzy than in acute mania, but I have never seen a case in which it was more noticeably so than in this epileptic. Later, when over his attack, he tried to give an account of his feelings, and described distressing hallucinations, one of which was that an indescribable presence was before him. I can not make out that he suffered any from actual physical pain, but that there were vague bodily feelings of intense discomfort that occurred with his mental distress is beyond doubt. This attack was not exactly like others that I have observed in this patient, but it had this feature in common with the most of them, which appears to me noteworthy: In him, so far as could be ascertained, all his insane spells were post-epileptic, occurring after one or more fits, but while he was in his usual condition, exceedingly irritable and dangerous, though generally rational, in some, if not all, of his maniacal or disturbed post-epileptic seizures, whether accompanied with consciousness, as in the above case, or delirious as in others, he was, as a rule, comparatively harmless; there was nothing of the ordinary epileptic fury or violence. In the other attacks I have seen him have, his condition resembled more nearly than anything else that of a man in alcoholic delirium tremens.

I have questioned a very large number of epileptics in regard to their memory of their epileptic seizures and maniacal attacks, and have always tried to critically weigh their testimony, and to exclude any error due to willful or involuntary misstatement. As a rule, they are tolerably honest in this regard, and when they are otherwise the tendency would be, I should think, rather to deny any knowledge of their performances, as they rarely like to admit that they are as violent and troublesome as is actually the case. In nearly all the cases, except those I have described, there seemed

to be some defect of memory, and perhaps I may say, presumably, of perfect consciousness during the attack. But in these, besides the testimony of the patients themselves, there was ample evidence, not only of as perfect recollection as the ordinary normally sane individual possesses of his acts, but of conscious and voluntary actions, and a certain degree of power of self-control. There was not, so far as any one could determine, even the dreamlike state of consciousness, considered by Pick* and Siemerling† to be the actual condition of these phases of epilepsy, and to assume that such was the case in the instance I have narrated, would seem to me an assumption in direct opposition to all the evidence. I presume we may allow that exceptions exist to the general rule that consciousness is lost, or very seriously impaired, in the epileptic seizure or its psychic equivalent or collateral, when all the facts we can gather in certain cases, carefully observed and critically estimated, point unmistakably to such a conclusion. In another memoir than the one from which I have already quoted, Dr. Hughlings Jackson, discussing the definition of epilepsy, says: ‡

"It does not matter for the definition whether there be loss of consciousness or not; loss of consciousness is a fundamental thing in most of the accepted definitions. If there be no loss of consciousness there is, according to most physicians, no epilepsy, and then the term epileptiform is used. But even when using the term epilepsy, in the ordinary sense of the word, the separation into cases where there is and where there is not loss of consciousness has no physiological warrant. It is an arbitrary distinction of psychological parentage. Loss of consciousness is not an utterly different thing from other symptoms. It is not to be spoken of as an epiphenomenon nor as a complication. Consciousness has, of course, anatomical substrata as much as speaking has. The sensory-motor processes concerned in consciousness are only in degree different from others. They are the most special of all special nervous processes, the series evolved out of all other (lower) series.

"To lose consciousness is to lose the use of the most special of all nervous processes whatever. If those parts of the brain be first affected by strong discharge where the most special of all nervous processes lie, there will be loss of consciousness at the out-

* *Arch. f. Psych.*, xv, p. 272.

† Verein f. Deutsche Irrenärzte, *Neurolog. Cbl.*, 1895, p. 884.

‡ *West Riding Lun. Asyl. Med. Reports*, lli, 1874, p. 330.

set. If processes of a subordinate series be discharged loss of consciousness of course occurs later. For example, in cases of convulsions beginning in the hand, consciousness is, in most cases, lost as soon as, or just before, the legs are reached by the spasm. In these cases the internal process will be that consciousness is lost as soon as the most special of all processes are reached by the internal discharge. But of course one does not locate consciousness so geographically as the mere words we must use them to imply. If a patient suddenly loses, by any process, the use of any large part of either of the two highest divisions of the nervous system, he will lose consciousness."

The admission in the above that loss of consciousness is not a primary essential of the epileptic attack is necessary with such a comprehensive morbid species as Dr. Hughlings Jackson makes out this disorder to be, and in the above passage he is much more consistent with himself than in the one first quoted. According to the most modern conception of epilepsy, of which indeed he may be called the father, all these convulsive manifestations, psychical as well as physical, are alike only manifestations of cortical irritability, and there is no essential difference in the pathology of any of the different forms of epilepsy. Indeed, clinically, they merge into each other, as is coming to be generally recognized. The use of the term "epileptiform" by physicians in the manner stated by him, is, I believe, nearly obsolete; the term is only used as a convenient one for those attacks that occur incidentally in other diseases the serious nature of which overshadows the importance of the symptom. Thus we speak of the epileptiform attacks of paresis, in which it is recognized as only a symptom of the general cortical inflammation. Practically it is epilepsy, but it is only an incident of a disorder otherwise well marked, instead of being the only or almost the only symptom.

The consciousness in the ordinary convulsive attack has mainly only a clinical interest. The condition of consciousness and power of self-control in the maniacal attacks and morbid pre- or post-epileptic condition appear, however, to have some forensic as well as clinical importance. If it appears that in some cases the unprovoked explosions of violence of epileptics are attended with perfect consciousness and memory, it might also seem that with these was necessarily entailed a greater degree of responsibility for the acts committed under these conditions than has generally been considered to be the fact. The difficulty, however, is more apparent

than real, for the conditions under such circumstances are assimilated to those of ordinary mania, in many cases of which there is nearly or quite unimpaired consciousness during the attack and subsequent recollection of all the acts performed. (I use the term consciousness of course as simply a sense of being and a knowledge of deeds and thoughts continuous with the normal state, and of course not as implying freedom from delusions, etc., or correct reasoning power or estimation of facts and their relations.)

The trouble seems to be that there has been a confusion in the ideas, and that consciousness has been considered as equivalent with responsibility, and that amnesia has been confounded with unconsciousness. The difficulty of making fine distinctions before courts and juries has favored the more ready acceptance of what is neither the result of accurate observation or scientific reasoning, viz., the dictum that unconsciousness is the essential criterion of the epileptic states.

The question of responsibility in epileptics need not depend on this point at all; there are many other elements to be considered, and this alone is a comparatively unimportant one. Amnesia, it is true, has an important bearing, and some cases of double consciousness present very puzzling problems, but lack of recollection does not necessarily imply unconsciousness, and should not be so accepted. Perfect consciousness and subsequent perfect memory are both consistent with absolute irresponsibility, and it is well to enforce the fact that neither in clinical observation nor in *a priori* deduction is there any ground for denying the possible coexistence of all these conditions in epileptic states.

I will here restate in substance the conclusions of my former paper, as a statement of what I believe to be facts that are, even yet, too little considered, and often entirely ignored by practitioners and neurological specialists:

1. That the epileptic discharge in the cerebrum may in some cases not involve all, or to any extent, those organs or parts concerned in psychic function so as to seriously affect or abolish consciousness, meaning by that term a vivid sense of being and knowledge of one's thoughts and actions continuous with that in the normal state. This fact is self-evident in partial epilepsy, but I think it has been shown that it may also be true in the more complete and well-marked attacks of major epilepsy, which differ only in degree from the former. It may also exist in the various forms of epileptic mental disturbance.

2. There may be states of epileptic double consciousness, as it may be termed, in which it can not be said that the mental functioning in the abnormal condition is less perfect and complete than in the normal state.

3. The post- (or pre-) epileptic outbreaks of violence, while attended with excessive morbid irritability and loss of control, and generally with a failure in the higher moral inhibitions, need be accompanied with no more impairment of consciousness than would naturally be caused by intense emotional disturbance in other conditions.

4. There may be a true or apparent automatism not attended with any loss of general consciousness, and due possibly to the rapidity of some psychic reflexes exceeding the limit of the reaction time necessary to their conscious recognition.

5. The definition of epilepsy which makes loss of consciousness an essential is an arbitrary one, not supported on pathological or clinical data, either in the ordinary convulsive phase of the disease or in its psychic manifestations.