ON A PARTICULAR VARIETY OF EPILEPSY ("INTELLECTUAL AURA"), ONE CASE WITH SYMPTOMS OF ORGANIC BRAIN DISEASE.

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I HAVE notes of about fifty cases of the variety of Epilepsy I am about to speak of. I have seen very many patients with symptoms of local gross organic brain disease (optic neuritis, &c.); in many of the latter, as subsequent necropsies showed, there was intracranial tumour. But one of the cases (Case 1, p. 191) I am about to relate and remark on (I have referred to it briefly, 'Bowman Lecture,' "On Ophthalmology and Diseases of the Nervous System," 'Trans. Ophth. Soc.' vol. 6), is the only one I have seen in my own practice in which this variety of epilepsy was found associated with marked symptoms of local gross organic brain disease.[1] Although necropsy was forbidden, the case is of great clinical importance. The variety of epilepsy alluded to is one in which (1) the so-called "intellectual aura" (I call it "dreamy state") is a striking symptom. This is a very elaborate or "voluminous" mental state. One kind of it is "Reminiscence"; a feeling many people have had when apparently in good health (see p. 184, the case of Quærens and that of Dr. Ferrier's patient, Case 3). Along with this voluminous mental state, there is frequently a "crude sensation" ("warning") of (*a*) smell or (*b*) taste; (or, when there is no taste, there may be movements, chewing, tasting, spitting, *implying* (?) an epileptic discharge beginning in some part of the gustatory centres), or (*c*), the

[1] Since this was written I have had a necropsy of a woman who had had paroxysms with the "dreamy state," and crude sensation "warnings" of smell. She had left hemiplegia and double optic neuritis. I can now only say that there was a tumour in the right temporo-sphenoidal lobe. My colleague, Dr. Beevor, who sent the patient to me, has kindly undertaken the examination of the specimen; on receiving his report I shall publish the case.

"epigastric" or some other "systemic" sensation. The wording of this statement implies, at any rate it is meant to imply, that the "dreamy state" sometimes occurs without any of the crude sensations mentioned, or movements supposed to imply discharges of gustatory elements, and that sometimes those crude sensations and movements occur without the "dreamy state"; this will be exemplified in cases shortly to be given for incidental illustration.

I have been struck by certain non-associations. In my experience vertigo, in the sense of external objects seeming to move to one side, rarely occurs with the "dreamy state." In this paper I have to state exceptions (see Case 2) to this. The other variety of vertigo, that is, the feeling of the patient himself turning, does not so rarely occur with the "dreamy state." Again, I have no account of crude sensations of sight (colour projections) associated with the "dreamy state," but I have notes of one case in which the patient, *at other times*, had migrainous paroxysms with visual projections. In cases of epilepsy beginning by colour projections, the much less elaborate mental state "seeing faces," is not uncommon. I have thought that crude sensations of hearing are not associated with the "dreamy state." Until recently I have known of no exception, but I shall have to relate one in a case, the notes of which are supplied to me by Dr. James Anderson. Auditory sensation-warnings are not rarely followed by "hearing voices" (really words as if spoken to the patient), a less elaborate state than the "dreamy state." I now return to the variety epilepsy with the "dreamy state."

There is not always *loss*, but there is, I believe, always, at least *defect*, of consciousness co-existing with the over-consciousness ("dreamy state"). *After* some paroxysms in which consciousness has been lost there are exceedingly complex and very purposive-seeming actions during continuing unconsciousness; in a few cases the actions appear to be in accord with the "dreamy state."

It will have been seen that I do not consider the "dreamy state" to be a "warning" ("aura"), that is to say not a phenomenon of the same order as the crude sensations of smell. &c. Hence my objection to the term "intellectual

aura," and adoption of the less question-begging adjective "dreamy," one which is sometimes used by the patients. It is very important in this enquiry to distinguish mental states according to their degree of elaborateness—from crude, such as the crude sensation-warnings of smell, &c., to the vastly more elaborate, such as the "dreamy state"—in order that we may infer the physical condition proper to each. The crude sensations are properly called warnings; they occur during *epileptic* (sudden, excessive and rapid) discharges; the elaborate state I call "dreamy state" arises during but slightly raised activities (slightly increased discharges) of healthy nervous arrangements.

I have previously considered this variety of epilepsy, 'Med. Times and Gazette,' Dec. 2nd, 1876, and Feb. 1, and March 1, 1879; 'BRAIN,' July, 1880. These papers have attracted very little attention; they have, however, been referred to by Dr. Mercier; by Dr. Beevor, in his important article "On the Relation of the 'Aura' Giddiness to Epileptic Seizures," 'BRAIN,' January, 1884, p. 488; and by Dr. James Anderson (*vide infra*, p. 182). The following quotation is from a lecture I published, 'Med. Times and Gazette,' March 1, 1879, p. 224:—"I think it will be found that in many, I dare not say in most, cases the voluminous mental ['dreamy'] state occurs in patients who have at the onset of their seizures some 'digestive' sensation—smell, epigastric sensation, taste, or, in cases where there are movements implying excitations of centres for some such sensations, such movements as those of mastication."

Under the name "intellectual aura," the "dreamy state" has long been known to occur in epileptics. The case of Quærens (*vide infra*, p. 184) is, so far as I know, the first definite case of epilepsy with that phenomenon published in this country. Dr. Joseph Coats, 'Brit. Med. Journal,' Nov. 18, 1876, has recorded a very important case of an epileptic whose fits, with few exceptions, were preceded by giddiness and a "peculiar thought." "Sometimes the fit only consists of the aura [the thought], followed by a peculiar feeling in the abdomen which passes up to the head and back to the abdomen, when vomiting results."

Dr. James Anderson has recorded a case of this variety [1] of epilepsy in which, from symptoms, ocular and cerebral, detailed in his report, he correctly predicated tumour, and its position. This case has several important bearings, but for my present purpose it will suffice to say, that the patient's "dreamy state" was associated with a rough "bitter sensation" in his mouth. It is the only case published which I know of in which a necropsy has been had revealing any local morbid changes in a case of the variety of epilepsy mentioned. Dr. Anderson refers to a case, closely like that of his own patient, recorded by Mr. Nettleship, 'Trans. Ophth. Soc.' vol. iv. (Necropsy by Dr. Sharkey). In the report of that case, however, the "dreamy state" is not mentioned; there was a crude sensation warning in the patient's fits, "a sudden feeling of suffocation in the nose and mouth." I think it not impossible that the "dreamy state" was present in the slight seizures (the patient did not always lose consciousness). I doubt not that I have in former years disregarded this important symptom. I have suggested ('Bowman Lecture,' *op. cit.*) that ophthalmic surgeons who see very many cases of optic neuritis (that is, cases in most of which there is local gross organic intracranial disease, such as tumour) should minutely investigate any paroxysms, however slight and transient, their patients may have, especially when there is any kind of defect of smell or taste. Just as the most exact knowledge we have of the seats of "discharging lesions" in different epilepti*form* seizures is from cases of gross local organic brain disease, so no doubt our most exact knowledge of the seats of "discharging lesions" in epilep*tic* seizures will be obtained from cases of such kind of disease. Some preliminary remarks on *slight* epileptic fits are necessary. I mean fits commonly called attacks of epilepsy proper.[2]

[1] "On Sensory Epilepsy. Case of Basal Cerebral Tumour, affecting the left Temporo-Sphenoidal Lobe, and giving rise to a Paroxysmal Taste-sensation and Dreamy State:" 'Brain,' Oct. 1886.

[2] Using the colourless word "fits" generically, I make three classes of fits (see 'Brain,' April, 1886): (1) Ponto-Bulbar; (2) Epileptiform; (3) Epileptic (Epilepsy proper of nosologists). As the name implies, (1) depends on discharges beginning in bulbar and pontal centres (laryngismus stridulus, certain uræmic fits (?) and asthma? and I imagine some fits *called* epileptic). I have published ('Brit. Med. Journ.', Nov. 20, 1886) the case of a boy who had fits started by

The slighter paroxysms are, the more deserving are they of minute and precise investigation, both for the patient's sake and for scientific purposes; for the patient's sake since, unless we give most careful attention to the details of them, we shall sometimes altogether overlook epilepsy; for scientific purposes, because the analysis of slight seizures is more easy and fruitful than that of severe ones. It often happens that a patient has sometimes slight seizures of the variety of epilepsy under remark, and at other times severe seizures; and not rarely he has no "warning," in any sense of the term, of the latter. Obviously the clue to the seat of the "discharging lesion" is only given definitely by the "warning" (such as the crude sensations mentioned); so that of the patient's slight seizures we may learn much, of the severe ones without warning very little that is definite.

I urge strongly that the great thing as to the diagnosis of epilepsy is not the "quantity" of the symptoms, nor the severity of the fits, but paroxysmalness. Again, *loss* of consciousness is not essential for the diagnosis of epilepsy; there may be *defect* of consciousness only; and, as we have been saying, there may be "over-consciousness" ("dreamy state") co-existing with the defect of consciousness; with defect of consciousness as to present surroundings there may be a rise of consciousness as to some other and often quasi-former surroundings ("dreamy state"); the latter may attract exclusive attention, the co-existing defect of consciousness being ignored. The most seemingly trifling symptoms, when occurring paroxysmally, deserve careful analysis in proportion to their paroxysmalness; suddenly "coming over queer" for

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touching his head, a case analogous to fits artificially produced in guinea-pigs (Brown-Séquard), and due, I presume, to abnormal changes in the ponto-bulbar region. Class (2) is of fits depending on discharge beginning in some part of convolutions of the so-called "motor region." I imagine that (3) is owing to discharge beginning in some part of convolutions of the cerebrum other than those of the "motor region." Both (2) and (3) are to my mind "cortical," although that term is commonly given to (2) only. I think it most likely that migrainous paroxysms are "fits" which are the (chiefly) sensory analogues of (2) epileptiform seizures. I feel confident that (3), epilepsy proper, will have to be subdivided very considerably, and possibly some seizures we call epileptic will have to be classified apart. I hope the above classification will be useful provisionally.

a moment or two, may be a slight epileptic attack and the forerunner of severe attacks. Of course it is a very old story that veritable epileptic fits may be very slight indeed, and, often enough, so slight and transitory that bystanders do not notice them; but there are particular reasons for insisting on this point with regard to cases of the variety of epilepsy the subject of this paper. I particularly wish to remark that, in many of them, the slight seizures are so very slight, that the patient unfortunately disregards or underrates them until a severe fit comes and declares their evil significance. As bearing closely on this neglect, I here say that such slight seizures are not always disagreeable, but sometimes positively agreeable. I have heard patients say that they used to "encourage" the feeling, before they knew what it meant. The day I write this, a patient told me that he used to try to bring the feelings on when he first had the attacks; they are now disagreeable. The symptoms often seem to be so fanciful to the patients that they may reckon them for a time as mere oddities. Even when they have found out the bad meaning of their slight attacks, they are often seemingly unwilling to give any details of the "dreamy state." Dr. James Anderson's patient "showed some reluctance to talk about the scene." They and their friends do not seem to care for questions as to movements of chewing, smacking the lips, &c., thinking, probably, that such little things have no real bearing on a serious condition. I would go further and say, that some medical men seem to think questionings on the "dreamy state," enquiries about spitting, champing movements, &c., are unpractical. I now stay to illustrate some of the preceding remarks.

One of my patients (*vide infra*, Case 5), a medical man, had seizures of this variety of epilepsy in so slight degree at first, that he took no more notice of them than to make them a subject of joking (to use the words from the report he made of his own case, he "regarded the matter playfully, as of no practical importance"). He now has severe as well as slight fits. I refer also to the case of a medical man who reported it himself under the pseudonym Quærens ('Practitioner,' May 1874, p. 284). The title is, "A Prognostic and

Therapeutical Indication in Epilepsy." When he consulted me, Feb. 1880, he had had eighteen severe fits (loss of consciousness, convulsion, tongue biting), and had had "many hundreds" of slight attacks. The *slight* attacks which he still had when I first saw him, were so slight that strangers noticed nothing wrong with him; he is never quite unconscious in them; the severest of these slight fits only "bemaze" him for a minute or two; he can go on talking. Here are epileptic attacks with defect ("bemazement"), but not with loss of consciousness. A medical friend who sees much of Quærens observes a little flushing of the patient's face, that he is "as if considering something," but only to his intimate friends is it known that he has any kind of seizure. The only local symptom I heard of is a peculiar feeling in the right hand. In each slight fit he has that variety of the "dreamy state" which I call Reminiscence; this peculiar feeling occasionally occurs in many people who are supposed to be healthy. Quærens quotes Tennyson, Coleridge, and Dickens, about it. I reproduce the quotation from Dickens, and after it the whole of the patient's report of his own case (op. cit.).

"We have all some experience of a feeling which comes over us occasionally, of what we are saying and doing having been said or done before, in a remote time—of our having been surrounded, dim ages ago, by the same faces, objects, and circumstances—of our knowing perfectly what will be said next, as if we suddenly remembered it."—*David Copperfield.*

"Last year I had the misfortune to become, for the first time in my life, subject to occasional epilepsy. I well remember that the sensation above described, with which I had been familiar from boyhood, had, shortly before my first seizure at a time of over-work, become more intense and more frequent than usual. Since my first attack, I have had only few recurrences of the feeling in question. On two occasions, however, it was followed next day by an epileptic seizure, and I have since treated its occurrence as an indication for immediate rest and treatment.

"There seems to me a twofold therapeutic interest in this experience. First that, whatever pretty suggestions Coleridge

and Tennyson may make to account for it, and however universal its occurrence may be regarded by Dickens, it probably ought to be regarded as showing disturbance of brain-function; and that, perhaps, its recognition and removal might sometimes prevent the development of a more important disorder. Secondly, that inquiry in cases of epilepsy may detect a something of this sort, put aside as not being of sufficient consequence to speak of; and yet in truth being a minimised form of *petit mal*, warning to precautions against a larger seizure."

The following is also a striking illustration of slight epileptic seizures with the "dreamy state," before severe fits. A man, H., aged 29, who consulted me, March 1882, began to be ill in 1873 or 1874 (he could not be more precise). He had "curious sensations," "a sort of transplantation to another world, lasting a second or so." He otherwise described them by saying that whatever he was doing at the time he (now I use his words) "imagined I have done this before, imagined I was in exactly the same position years ago." He said too, that it was as if waking from sleep. At first he had these "sensations" at long intervals (he could make statements no more definite), but they became more frequent, two or three a day. He was not quite unconscious in them; he had defect of consciousness only. He thought nothing of them; took no notice of them. Now, suppose he had at this stage consulted a medical man, what would have been said of such seizures? The patient had no crude sensation-warning. I got no more than the facts stated. There might be a natural hesitation to diagnose epilepsy from the "dreamy state" alone, as in this case it was very like, if not quite like, ordinary "reminiscence." I should never, in spite of Quærens' case, diagnose epilepsy from the paroxysmal occurrence of "reminiscence" without other symptoms, although I should suspect epilepsy, if that super-positive mental state began to occur very frequently, and should treat the patient according to these suspicions were I consulted for it. I never have been consulted for "reminiscence" only; there have always been in the cases I have seen, at the time I have seen them, with this and other forms of "dreamy state," ordinary, although often

very slight symptoms of epilepsy. Some of the patients who have "reminiscence" with other symptoms in epileptic paroxysms know quite well that its occurrence in healthy people is part of popular knowledge. This case of H. was then, however, most certainly one of epilepsy; the sequel showed it. To go on with the report of his case. One morning (March, 1875) he found his tongue bitten; of anything occurring in the night he knew nothing. He did not consult a medical man until he found his tongue bitten another morning. In February, 1882, he had a severe fit in the day; twice he fell in a fit in public places. His friends told him of other attacks in the day, of which he knew nothing. In them he became unconscious, and after some of them, whilst continuing unconscious, he acted elaborately and strangely.

Another way of showing how slight paroxysms of epilepsy may be, is by the fact that the patient does not mention them when he has severe attacks. This remark applies to slight fits of other kinds. A man (W.) who consulted me for severe fits (and who then had quasi-trifling seizure with the "dreamy state"), came to me a year later, saying that he had had no fits. He had had, however, many slight seizures, but so slight were they that he said no one else knew he had them; he goes on walking in them. His crude sensation is the "epigastric" sensation. I give his own words as to the "dreamy state;" a "double self" and a "thought."—"I get an idea in my head different from what I am thinking of." He might have twelve of these slight fits, for fits they certainly are, a day.

Before leaving this part of my subject I remark, by way of recapitulation, that he who neglects the "dreamy state," because it is indefinite and "merely curious," and such symptoms as chewing, &c., movements, and apparent alteration in the size and distance of external objects, because they seem trifling things, may not even surmise that his patient has the serious disease epilepsy in a rudimentary form, until a severe fit comes to tell him so. Even then it may be said that the slight paroxysms "developed into" epilepsy; but I insist that such slight paroxysms are themselves epileptic. Such

slight seizures may be erroneously put down as hysterical, or may be fancifully ascribed to indigestion, malaria, &c.

I have confessed that in former years I have underrated, and even, I find, neglected, the "dreamy state." Both to acknowledge a great clinical fault and for the importance of illustrating elaborate actions *after* epileptic fits with the "dreamy state," I give the following extract. In an article, West Riding Asylum Reports, vol. v., 1875, pp. 116–17 ("On Temporary Mental Disorders after[1] Epileptic Paroxysms"), I mention the case of an epileptic patient who after some of his slight seizures (he had severe ones, too) would act very elaborately. After one he was found "standing by the table mixing cocoa in a dirty gallipot, half filled with bread and milk intended for the cat, and stirring the mixture with a mustard spoon which I must have gone to the cupboard to obtain." But I omitted to state what I find in my notes of this case, that at the onset of his fits the patient had "a sort of dreamy state coming on suddenly." I fear I then thought this symptom too indefinite to be worth enquiring into and recording, or possibly, to adopt Quærens' words, I put it "aside as not being of sufficient consequence to speak of," though I hope the omission was only a blunder. In this patient's case I have no note of any crude sensation-warning.

No better neurological work can be done than the precise investigation of epileptic paroxysms. Whilst epilepti*form* convulsions have been minutely studied, comparatively little attention has been given to the analysis of epilep*tic* fits. Speaking only of epileptic fits and solely of slight seizures of this kind, the endeavour should be not merely to ascertain whether a case is one of "genuine epilepsy" or not, but to describe all that happens in the paroxysm. For although I use the expression "variety of epilepsy" as if

[1] I draw attention to the word "after," as I have been said to adopt the explanation that "epileptic mania" is the outcome of the same degree of discharge as that which produces convulsion. But I hold almost the very contrary doctrine. I have contended strenuously that *elaborate* mental states *never* occur during, and that *elaborate* series of movements *never* occur from (directly from) *such* a discharge. Only such mental symptoms as crude sensations occur during that degree of discharge; such elaborate mental states, as the "dreamy state," in my opinion, *never* do.

there were a clinical entity "Epilepsy," with complications, peculiarities, &c., warranting subdivisions of it, there can be no question that there are at least as many epilep*sies* as there are paroxysms beginning with different "warnings." What we call the warning,[1] this being the first event from, or during, the onset of the local, sudden, rapid and excessive (or briefly the "epileptic") discharge, is the clue to the seat of the "discharging lesion." There are at least as many differently seated "discharging lesions"[2] as there are different warnings of the paroxysms. So that I admit that the grouping together of cases of epilepsy which present, in the paroxysms, the "dreamy state" is an entirely arbitrary proceeding, as much so as taking any other striking symptom to mark a group would be; all the more that not only, as I have said and illustrated, does the "dreamy state" sometimes occur without a crude sensation of smell, &c., but that these crude sensations may occur in slight fits without the "dreamy state." And in the group itself, as arbitrarily indicated, there are at least several different epilepsies; certainly a paroxysm beginning with a crude sensation of smell is a sub-variety, and one

[1] As before said, the "dreamy state" is not a warning in the sense of the word used in the text; crude sensations are warnings in the proper sense.

[2] The expression "discharging lesion" is objected to by some of my medical friends. I have been told that we can understand an ulcer discharging, but not nerve cells. Apart from this kind of criticism, the term may be objected to for better reasons, especially when the word "seated" is used with it. I only mean by "discharging lesion" a vast exaltation of the function (hyper-physiological alteration) of cells of small part of the cortex caused by an abnormal nutritive (pathological) process involving an increased but an inferior kind of nutrition. By "seated" here or there I simply mean that the cells so altered are of this or that part of the cortex. A "discharging lesion," or "physiological fulminate," is an alteration of cells of nervous arrangements of the cortex, representing some impressions or movements, or both, of parts of the body. That the "discharging lesion" (or whatever it is to be called) is often small and local in epilepti*form* seizures (of a few cells of the middle motor centres ("motor region") of one half of the brain) is not, I think, doubtful. I have suggested that the radical cure of fits in such cases is for the surgeon to cut out that "discharging lesion," as well as the tumour, if there be one, producing it. I think too that in epilep*tic* fits the discharging lesion is similarly "doubly local," but of the highest centres. A most excellent name for what I call "discharging lesion" is Horsley's term "epileptogenous focus." My reason for continuing to use the term "discharging lesion" is that it keeps us well in mind that the epileptic process is but an exaggeration, although a vast one, of normal nervous discharges—of a normal *physiological* process.

beginning with the "epigastric" sensation is another, although in both cases there may be the "dreamy state." The "discharging lesion" must be differently seated in the two cases; most likely the former is a "discharging lesion" in some part of Ferrier's centre for smell. (See also Dr. James Anderson's patient's case, in which there was a "warning" by a taste.) But artificial separations, studies of cases as they approach certain types, are absolutely necessary for clinical purposes. Hence I shall continue to use the expression "variety of epilepsy" for a group of different epilepsies, each of these agreeing in presenting the "dreamy state;" this will not be harmful if we investigate each case on its own merits. But I hope that this empirical method, one much less empirical than the current method, will aid us towards a scientific classification; that we shall ultimately be able not only to speak of certain symptoms as constituting genuine epilepsy or some variety of it, but of these or those particular symptoms as pointing to a "discharging lesion" of this or that particular part of the cortex. This will be trying to do for epilepsy what has been done to a great extent for epileptiform seizures. We may speak of "varieties of epileptiform seizures," but we speak of each case as showing that there is a "discharging lesion" of this or that part of the cortex in the Rolandic region.

Before we can make good generalizations we must carefully analyse. To group together as "visual warnings" colour projections, apparent alteration in the distance of external objects and "dreamy states" with definite scenes, is generalising without previous analysis, and is an attempt to organise confusion; they are exceedingly different things. He who is faithfully analysing many different cases of epilepsy is doing far more than studying epilepsy. The highest centres ("organ of mind"), those concerned in such fits, represent all, literally all, parts of the body sensorily and motorily, in most complex ways, in most intricate combinations, &c. A careful study of many varieties of epileptic fits is one way of analysing this kind of representation by the "organ of mind." Again, it is not, I think, an extravagant supposition that there are, after slight epileptic fits of different kinds, many temporary

morbid affections resembling those persistent ones produced by destructive lesions of different parts of the cortex. To illustrate for a moment by epileptiform seizures; there is temporary aphasia after some fits beginning in the face or hand (more "elaborate" utterances, I think, when the exact starting-point is in the ulnar fingers); this is the analogue of aphasia from a destructive lesion (softening, &c.) To return to epilepsy. There is, I am convinced, in, or after, certain paroxysms of epilepsy temporary "word-blindness;" certainly in one patient of mine who had a "warning" by noise. I could not make out that this patient was at the same time "word-deaf," but thought his temporary deafness was ordinary deafness. Still there may have been word-deafness. In another patient, who called his attacks "losses of understanding," there was clearly both "word-deafness" and "word-blindness," with retention of ordinary sight and hearing; this patient's attack used to begin with a warning of noise, but he has recently had his "losses of understanding" without that warning.

I have given brief details of some cases of the variety of epilepsy with the "dreamy state" in the preceding introductory remarks. I now narrate other cases at more length.

CASE I.—*Epileptic attacks with crude sensation warnings, by smells in the nose and by the "epigastric" sensation; "Intellectual Aura" or "Dreamy State"; Double Optic Neuritis. Attacks of left-sided tremor—Apoplexy and left hemiplegia. No Necropsy.*

It is well to say at once, that there was no evidence of disease of the digestive, renal, circulatory or respiratory systems. There was no history of syphilis. For most of the notes of the case I am indebted to Mr. Wholey.

A. B., a man 37 years of age was sent from the out-patient room to George Ward, London Hospital, to see me, Nov. 7, 1884. He was subject to attacks of *le petit mal*. The first attack was in 1882; it only lasted about five minutes. He had no more until May, 1884; since which date he had had many, sometimes three or four a week. The attacks began by smells, which he declared to be horrible, but he could give no particular description of them; his wife said that he had likened them to the smell of phosphorus. There was no loss of smell (tested Nov. 17th) as there sometimes is in epileptics who have paroxysms, beginning with such so-called "subjective" smells. (There was no organic disease of the nose.) The patient had another preluding sensation—one seeming to him

to start from the epigastric region. No doubt both these crude sensations were concomitant with the onset of the central discharges causing the fits—of the cells of that part of the cortex risen into that high degree of instability which I call a "discharging lesion." His wife said that for a day or two before an attack he felt drowsy and stupid. In the attacks the patient would become "vacant," and would sometimes lose consciousness altogether for a short time. But besides negative affection of consciousness (that is, when consciousness was only defective), there was at the same time the diametrically opposite, the super-positive, state, "increase of consciousness," that is, there was the so-called "intellectual aura," what I call the "dreamy state." Thinking it very likely, because he had a "warning" of smell, that he had this super-positive state, I urged him to tell us all that he felt in his paroxysms, asking no leading questions. He said that he "began to think of things years gone by," "things intermixed [like all the rest on this matter, these were his own words] with what had occurred recently," "things from boyhood's days." Another account is "peculiar sensations passing through his memory and appearing before his eyes." "He thinks of things he has, might, or will do," "he mentally sees people whom he has not seen for some years." He had also in the paroxysms left-sided movements (he was, it is necessary here to say, right-handed). They were described as "trembling." According to the patient's wife, the movements began after the other paroxysmal symptoms; according to him, with them. He said they began either in the leg or in the arm; according to his wife, they always began in the leg. All that is certain is that they were left-sided, but I have little doubt but that they did, most often at least, start in the leg. On January 12, to anticipate, the following note was made:—"Another fit this morning early. Tremor began in the left leg and then 'went up' the side of the body and into the left arm. Trembling was very rapid, and lasted on and off quite an hour. He tried to put bread to his mouth with the left hand, but the trembling prevented him from doing it without using his right hand as well. He tried to walk, and in doing so he says he felt as if he must go to the left, and it was only by dint of a good deal of effort that he could walk at all straight. In some attacks beginning in the left toes there occurred flickering in the left side of the face, and when the arm was gained it was affected after the face." That these attacks should last so long as mentioned in the foregoing note does not invalidate the assertion, that they were owing to central discharges. It is well known that even some severe epileptiform seizures of the common kind last for hours, there being not a mere succession of fits, but one continuous seizure. The "reflexes," superficial and deep, were considered to be normal.

For more than twenty years I have urged the routine examination of the fundus oculi in all cases of nervous disease. But in this case at the first visit I stupidly omitted using the ophthalmoscope. On Nov. 17, Mr. Wholey, my then House Physician,

discovered double optic neuritis. On that day I for the first time saw double optic neuritis in a case of this variety of epilepsy. As is exceedingly common in physicians' practice, there was no defect of sight to careful testing. A few days later Mr. Couper examined the patient's fundi, and reported as follows:—

"*Left Eye.*—Considerable capillary redness of disc, with œdematous swelling amounting to 2½ *D*. The choroidal boundary of the disc is concealed from view. The optic nerve fibre bundles are faintly visible above and below. There are radial streaks; they show no blood-staining. The œdema and greyish opacity extend a short way from the disc into the retina. The veins are large and prominent, and slightly varicose. *Right Eye.*—There is more œdema of this disc, the swelling amounting to 3 *D*, also more greyish opacity; the choroidal margin is concealed. The veins are large, very slightly varicose, and this latter change extends far towards the equator throughout several ramifications. There are no visible hæmorrhages or blood-staining of the disc, but there is considerable capillary engorgement. the disc being as red as the adjoining part of the fundus."

Finding double optic neuritis, the conclusion was that all the symptoms were dependent (mostly indirectly) on tumour of the cerebrum, its right half as the left-sided motor symptoms showed. No conclusion was at first come to, as to the nature of the tumour: it was not considered likely to be a syphilitic one.

Under mercurial inunctions the optic neuritis passed off. The fundi were examined again by Mr. Couper, Jan. 5, 1885; the swelling was less. Details of this examination need not be given. On Feb. 19, Mr. Couper examined for the third time, and reported that if he had then examined for the first time he could not have said that there had been neuritis; the discs had become again normal in appearance.

The patient, rid of his optic neuritis, did not seem much better in general. He was slightly bemazed, slightly hesitating, slow rather in speech and suffered from headache. He was, however, up and about, and to an ordinary non-medical observer no decided mental or physical defect would have been at most times observable. But, as often happens in cases of optic neuritis, or, as in this case, in patients who have had it, death occurred rapidly. Mr. Wholey noted, March 25, that the patient had been complaining very much of pain in the head. About 7.30 P.M. the patient went to the lavatory and was no doubt sick there, as some yellowish fluid came from his mouth and nose. He became suddenly pale and fell down unconscious; there was left hemiplegia. He died about six hours after the attack. Necropsy was forbidden.

Commentary on Case 1.—The things to be remarked on are: (1) Double optic neuritis and its existence without defect of sight; (2) Rapid death in cases of double optic neuritis (from the intracranial disease it signifies); (3) Treatment of

cases of brain disease with optic neuritis; (4) The left-sided motor paroxysms; (5) Crude sensation-warnings (smell and the "epigastric sensation"); (6) (*a*) Negative affections of consciousness with (*b*) super-positive affection of consciousness ("dreamy state").

Of 1, 2, 3, and 4, I intend to say little here. I have written on 1, 2, and 3, many times since 1865, and at very great length in the 'Trans. Ophth. Soc.' vol. i. 1881, p. 60 *et seq.* The double optic neuritis is clinically the most important thing in the case, certainly a thing of most importance in prognosis as regards life. It is accepted doctrine now-a-days that it is (*a*) the *best* evidence (which means that it is not decisive evidence) of local gross organic disease (tumour, &c.) within the cranium; that (*b*) it is of no localising value beyond that it points to disease "within the cranium;" that (*c*) it very often exists with good sight;[1] that (*d*) under treatment it may pass off, sight remaining good.

It is certain that double optic neuritis may pass away under treatment when the organic disease within the skull causing it remains, sight continuing good. It is an error to suppose, when a patient is rid of double optic neuritis, of headache, and all other symptoms pointing to intracranial tumour, by anti-syphilitic treatment, that a syphilitic tumour of the brain has been got rid of. No doubt the organic disease in A. B. (Case 1) remained when the optic neuritis had disappeared, and that this disease afterwards caused his death. I always treat optic neuritis in the same way as I should intracranial syphilis; the cause of it is sometimes a syphilitic tumour of the brain; but could I know that the lesion was not syphilitic I should give mercurials and iodides. (Of course, cases in which the neuritis occurs in Bright's disease and cases of swelling of the discs in tubercular meningitis are excepted.) I believe

[1] I very well remember my astonishment on finding for the first time, that a patient with double optic neuritis could see well ("Case of Tumour at the Base of the Brain," 'Medical Times and Gazette,' June 17, 1865; 'Royal London Ophthalmic Hospital Report,' vol. iv. 1865). But now-a-days the young medical men I am acquainted with are astonished that any one doubts that marked optic neuritis often exists with good sight. For all that, although well known, it is not sufficiently known that patients with very striking abnormal changes in the discs may have no visual defect.

that there would be fewer blind people if the ophthalmoscope were used by routine in cases of severe headache; optic neuritis, discovered in its præ-amaurotic stage, presumably the stage most amenable to treatment, would very often yield to treatment. I do not, however, say that optic neuritis will not pass away without drug treatment. For after removal of tumour from the brain (Horsley), optic neuritis has disappeared when no medicines have been given. Ferrier narrates a case of cerebral abscess ('Lancet,' March 10, 1888) in which optic neuritis passed off after operation by Horsley; no drugs were given. Horsley trephined and evacuated a cerebral abscess, the position of which Ferrier had very accurately diagnosed. The patient is now quite well. Yet I should not dare to omit treatment of the kind mentioned in ordinary cases of optic neuritis. If it does nothing for intracranial tumour, it often, I am convinced, prevents blindness. To return to the case of A. B.

It is well known that patients with double optic neuritis often die suddenly or rapidly, as A. B. did. A. B. probably died by hæmorrhage from a vascular tumour of the right cerebral hemisphere (temporo-sphenoidal lobe ?). In some cases, as Hilton Fagge has pointed out, patients who have cerebral tumour die by rapid respiratory failure. This may happen when there is no hæmorrhage from the tumour. It is possible that cerebral tumour, besides producing optic neuritis, sometimes produce similar pathological changes in centres in the medulla, the respiratory among others.[1]

The attacks of one-sided tremor ("diluted convulsion") such as A. B. had, occur, in my opinion, in cases of disease behind the so-called motor regions; if so, there is some little evidence towards showing that the supposed sensory districts are not purely sensory. They were not epileptiform seizures, I mean not like fits I have seen dependent on disease of the so-called

[1] Some time ago ('Trans. Ophth. Soc.' vol. i., 1881, p. 98) Dr. Buzzard said, "Was it possible . . . that the vomiting and slowing of the pulse might represent an affection of the pneumogastric brought about by the same cause as that which produced optic neuritis, and that the sudden or rapid death Dr. Hughlings-Jackson had mentioned as one of the possible contingencies of optic neuritis from intracranial disease, might also be explained by a more severe influence on the same nerve?"

motor region. I shall speak of these "diluted convulsions" elsewhere.

Saying again that the topics 1, 2, 3, and 4 are clinically of vast importance, I shall go on to speak of cases of epilepsy with the "dreamy state" more generally.[1] I have only seen three cases (Dr. James Anderson's patient, A. B., and that of a woman[2]) in which with this variety of epilepsy there were strong symptoms of local gross organic disease within the cranium. Before speaking further of the (5) crude sensations and (6) abnormal affection of consciousness (*a* and *b*), I will narrate other cases of this variety of epilepsy in which there is no reason to suppose that there exists local *gross* organic disease. I say local *gross* organic disease, meaning such as tumours, abscesses, cysts, &c. That there is some local disease in every epilepsy I have no doubt whatever; there is, beyond question, some *pathological* process productive of high instability, which is a functional change (abnormal physiological change) of a few cells of some part of the cortex. I would here refer to remarks I made on the use and misuse of the term functional ('BRAIN,' January, 1888, p. 312).

[1] The question whether fits of epilepsy are produced by tumour or not is, however, I think important with regard to the epilepsy itself. I imagine that the pathology of most cases of epilepsy proper is that the "discharging lesion" is the consequence of plugging of arterioles (such arterio-cortical pathology is certainly the pathology of some epileptiform seizures). Whether the discharging lesion is produced by an encephalitis about a tumour or by plugging of vessels, the physiological condition (the "discharging lesion") is the same. I am suggesting that there is another sort of difference. Centres for taste and smell lie, accord to Ferrier's localisation, in the region of the posterior cerebral artery, whilst, still according to his localisation, the centres for hearing and part of the centre for sight (angular gyrus) lie in the region of the middle cerebral. Hence, if arterial plugging be the pathology, it may be that we have different varieties of epilepsy proper, according as arterioles are plugged in different vascular regions. The variety of epilepsy I am remarking on in the text may be owing to morbid changes in the district of the posterior cerebral. But tumours would grow regardless of vascular regions. I suggest that cases of epilepsy with mixed warnings (of smell or taste along with warnings of noise or colour) are more likely to be owing to tumour or other gross organic disease, than to have the minuter pathology I have mentioned—that of arterial plugging and its consequences. However, doctrines as to the sensory localisations are in an unsettled state. Ferrier thinks that another part of the visual centre is the occipital lobe, and this region is supplied by the posterior cerebral artery. Schäfer (BRAIN, April 1888) says that the visual area "comprises the whole of the occipital lobe," and that it "perhaps includes a part or the whole of the angular gyrus."

[2] See footnote 1, p. 179.

The case next to be related is unusual, in that the severe fits preceded, for some years, the slight attacks. It is, I think, exceptional in other ways.

CASE II.—*Severe epileptic fits without "warning" for twenty-five years. —Slight seizures for the last eighteen months (true vertigo; smells; "dreamy state.")*

William B., aged 47, was an out-patient under the care of Dr. Beevor, National Hospital for the Epileptic and Paralysed.

My colleague, knowing my interest in this variety of epilepsy, told me the particulars of the patient's fits and permits me to report the case. It may be well to give first what the patient, at my request, wrote down of his own case, exactly in his own words. "W. B——, who for twenty-five years suffered from occasional attacks of epilepsy, has now for the last eighteen months (on and off) been subject to [attacks of] violent giddiness and headache, accompanied with strange smells and tastes, the more prominent being that of chloride of lime; he also has at the same time, the sensation of walking or moving in space and being brought into close contact with prominent buildings, such as churches, railway stations, &c., although a long distance from them, and not having seen them for a length of time."

I now give a fuller account, which I got by enquiry, although it involves some recapitulation. For twenty-five years the patient had been subject to fits, in which he became unconscious and was convulsed; his tongue was not bitten. Of these attacks he had no immediate warning, but was drowsy six or eight hours before their onset. He would not go to town on business when he felt drowsy, taking this as evidence that a fit was coming. He had at that time no slight fits. For eighteen months he has had slight fits only, and it is to the peculiarities of these that I wish to draw attention.

The first thing is a giddy feeling; it is true vertigo. This case is the only one investigated by myself in which I have been certain of the occurrence of this variety of vertigo—apparent movements of external objects—in epileptic fits with the dreamy state (p. 108). He said "things were all of a move," and was quite sure that they moved to one side; he was not absolutely certain to which side they moved, but was almost certain that they passed to the left (apparent movement of real external objects is meant, not of ideal objects, *vide infra*). With or just after this came "strange smells and tastes," the "most prominent" being like chloride of lime; he said it was odd to speak of the taste of chloride of lime as he had never tasted that substance. He knew nothing of chewing, &c., movements, and had not been told of them. The next thing was his "dreamy state." He seemed to actually see large buildings which he had once seen; it might be that he seemed near a church, "close to its wall." In the last attack he "saw" certain almshouses, "all in a moment saw that building and could actually see the clock." The things he "saw" seemed of a natural colour.

He did not always lose consciousness; when he did it was just after "seeing" the buildings. Indeed in one, since the above was written, he had "had the smell," but no movements of external objects and no visions. The general feeling in the fit was disagreeable; he said there was no fear. There was no epigastric sensation. He did not pass urine in the attacks. There was no tendency to evacuation of the bowels after them. He had no one-sided symptoms, beyond the feeling of displacement of external objects to one side. He was not left-handed.

His smell, each nostril, was tested by Dr. Beevor and was found present. His taste was not defective so far as he knew. He was, he said, always sniffing; I observed that he was always doing it when with me; it was like some one strongly inhaling a scent. He had a sensation of trickling in the left nostril, but there was no unusual secretion from the nose. His optic discs were normal. He could not hear quite so well with the left ear as with the right, but the defect was trifling.[1]

Dr. Ferrier has given me the notes of a case of epilepsy, in which there was a crude sensation of smell with the "dreamy state." In the letter accompanying his report, he writes, "I send you the notes of the case of 'reminiscence' which I promised you. I think you will find it interesting in reference to your views of 'dreamy states.' The patient described the stages of her condition with great lucidity, and without any suggestions from me." The following is the account which Dr. Ferrier has sent to me. The case is, I think, unusual in that the smell comes last.

CASE III.—*Attacks of le petit mal, &c.; Crude sensations of smell and the "dreamy state;" Reminiscence.*

X., married, the mother of three children, had a convulsive attack (said to have been uræmic eclampsia) about a year ago, which came on while nursing her husband in an attack of scarlet fever. Since then she has been subject to attacks of *le petit mal*, without convulsions. These attacks coincide with her monthly periods, and always begin in the night and continue for a day or two. They vary in frequency; occasionally as many as seventeen occur in one day. They are always of the same character, and the patient describes them as going through three distinct stages. The first stage is a dreamy state or reminiscence, in which everything around her seems familiar or to have happened before. The second stage

[1] As said, warnings by crude sensations of smell occur in epileptics who have no "dreamy state." Recently Dr. Beevor has drawn my attention to the case of a woman (L. E.) who has that warning and no "dreamy state;" she has another crude sensation, a peculiar feeling in the two ulnar fingers of the left hand.

is a pain in the stomach; and the third is a "terrible" smell in the nostrils, associated with a similar taste and occasionally nausea, but without vomiting. Then she feels tired and sleepy. She never falls during the attacks, but says her husband knows when she has an attack by a kind of imploring look on her face, as if she were asking for help.

When the attacks occur in the night she knows of their occurrence and their number by being awakened each time by the terribly offensive smell.

The patient is spare (formerly robust) and rather anæmic. There are no indications of organic disease anywhere. The urine is free from albumen; there are no indications of local affections of the nostrils.

CASE IV.—*Slight epileptic attacks for many years ("Dreamy state," &c.), before severe fits; onset of severe attacks by feelings like those of the slight fits—Certain movements of lips.*

A woman, M. W., 42, consulted me, 1881. Since the age of 13 or 14 she had been subject to the frequent occurrence of slight "nervous attacks"; with each of them was "reminiscence." She also called them "flashes of unconsciousness;" the two descriptions showing that the mental state was duplex, of two opposite elements. For many years she took no notice of them, never mentioned them, nor did any other person observe anything wrong. At length she consulted a medical man, who said that her case was one of hysteria. As the sequel showed, this was not so. Two years before I saw her, when her age would be about 40, she had two severe epileptic attacks with tongue biting, and a third later on. Of course it may be said that she may have had the two severe epileptic attacks quite independently of the "nervous attacks," and that the two things were quite different. But she continued to be subject to the "nervous attacks," and that they were slight fits of epilepsy, or, if any one likes, abortive fits, is shown by the fact, that each of the severe attacks began by her having in a slight degree the feelings she had in the slight attacks.

The slight attacks might occur two or three times a day, or she might miss a month. They are very slight. As said, no one, early in the case, noticed anything of them. Of recent years, only once has any one, other than her intimate friends, noticed anything wrong, nor do they always. If walking, she goes on walking; only once or twice have they been so bad that she has had to stop. If at tea, she would go on pouring out, but would pour out wrongly. She may go on with her sewing, and may thread a needle. These things show that her attacks are very slight. (*Vide* p. 183, on negative affection of consciousness.) The feeling she describes in the slight attacks used to be pleasant, but is not so now: there is, however, she says, no fear with it. The attack is "over in a moment." Her "dreamy state" is variously described as "like some scene or dream," "as if you remember that again." The feeling is vivid, and yet she cannot say what the particulars of the "dream" or "scene" are. It is not of anything

which has happened in real life, but is like what has happened (I suppose she meant that the "dreamy state" was as vivid as if it were a memory of something which had actually happened). So much for the positive, or rather super-positive, element of her mental condition in the seizures. She speaks of a negative element, "a withdrawal from the present; she hears people talking, but does not know what they say."[1] She may, she is told, reply, but gives random answers. There is clear evidence of defect of consciousness; her expression "withdrawal from the present" is a popular expression, meaning the same thing as "defect of (object) consciousness"; I say *defect*, because I take it that the withdrawal was, considering the facts stated when dealing with the slightness of her attacks, partial only. As a rule she does not lose consciousness altogether.

She does not pass urine in the slight attacks; there is no tendency for her bowels to be moved after them.

As to crude sensations. Sometimes when the attacks "are about" (occurring frequently) she has a sensation either of smell or of taste at the back of the throat, *but not in connection with the seizures.* A friend who came with her said that M. W. would make, in the seizures, a peculiar movement of her lips, slightly like a tasting movement. There was no evidence of one-sided symptoms, that is, no account of spasm, numbness &c., on one side of the body.

I ask a similar question to that I asked when giving some details of the case of H. (in the introductory remarks, p. 186), what would have been thought of this patient's "nervous attacks" if she had consulted one for them before she had the severe fits? If they were like those she has had since the severe ones, one could have concluded that they were epileptic. But such a diagnosis, say it had been made when she was 14, would have been accepted by few medical men, and by some the non-occurrence of ordinary epileptic attacks for years would have been taken as proof that the "nervous attacks" were not epileptic. That she was epileptic from the age of 13 or 14 I have no doubt whatever.

CASE V.—*Slight attacks of Epilepsy with the "dreamy state" for some years before severe attacks—Mouth movements—Automatic actions during unconsciousness (which continued after the slight fits).*

The following is a very important case. It is that of a highly educated medical man, who reports it himself. Names

[1] It is easy to say of this one part of the condition (common in slight attacks of epilepsy) that it is "word-deafness." If it be, it is, or, rather, is part of, a negative affection of consciousness.

of places are omitted or altered from his original report, the alterations being endorsed by the patient; the alterations make no difference in the medical import of the case. He had first very slight attacks, then severe attacks at long intervals also. I shall comment on the slight attacks only.

What he calls "recollection" is what I have called "reminiscence." I retain his term "aura," putting it between commas, although I do not use it myself for any form of the "dreamy state." The report shows clearly that he has some attacks without *loss* of consciousness (see his remarks on reading poetry and on his glacier expedition). In other attacks he had loss of consciousness, and during unconsciousness continuing after them he acted automatically. The actions related in the closing paragraphs show very complex, special, &c., actions after a fit which was presumably slight. I may refer to remarks on this matter in my part of the discussion on Dr. Mercier's paper on "Inhibition," which will appear in some future number of this Journal.

He had no crude sensation, but the words I have italicised in his account of his physical state, p. 204, during the slight paroxysms imply, I consider, discharge of cortical elements, serving during taste. (The report was finally sent in July 1888.)

"I first noticed symptoms which I subsequently learnt to describe as *petit mal* when living at one of our Universities, 1871. I was in very good general health, and know of no temporary disturbing causes. I was waiting at the foot of a College staircase, in the open air, for a friend who was coming down to join me. I was carelessly looking round me, watching people passing, &c., when my attention was suddenly absorbed in my own mental state, of which I know no more than that it seemed to me to be a vivid and unexpected 'recollection';—of what, I do not know. My friend found me a minute or two later, leaning my back against the wall, looking rather pale, and feeling puzzled and stupid for the moment. In another minute or two I felt quite normal again, and was as much amused as my friend at finding that I could give no distinct account of what had happened, or what I had 'recollected.'

"During the next two years a few similar but slighter attacks occurred, involving mental states which struck me as like to the first and to each other, but of which I can now recollect no details. I asked medical advice, but gathered no explanation, received no treatment, and regarded the matter playfully as of no practical

importance. I have been in the habit of dreaming very little all my life, but during these years noticed a few occasions when I woke in the night with an impression that I had succeeded in recollecting something that I wanted to recollect, but was too sleepy to give any attention to it, and had no definite idea of it in the morning. These feelings were slightly uncomfortable, and usually, I think, accompanied by a slight involuntary escape of saliva found on the pillow in the morning, and once or twice by a soreness of the edge of the tongue, due, I should presume, to its having been slightly bitten. They did not recur after about 1875.

"In 1874 I first had a *haut mal*, preceded by the mental condition I had felt in *petits maux*, and after medical advice from a physician in London learnt the nature of the disease, and began to attend a little more carefully to the symptoms, which interested me more, as I had then begun to turn my attention to medicine.

"I had a severe attack of pneumonia with pleurisy, and perhaps empyema, beginning in October, 1875, and during slow convalescence (Dec. 1875—March 1876) was more frequently affected. The character of the *petits maux* gradually became more stereotyped, and during the period 1876–1886 varied only within comparatively narrow limits. I will attempt to describe the features which I think were common to all, or nearly all.

"*Mental Condition.*—In a large majority of cases the central feature has been mental, and has been a feeling of Recollection, *i.e.* of realising that what is occupying the attention is what has occupied it before, and indeed has been familiar, but has been for a time forgotten, and now is recovered with a slight sense of satisfaction as if it had been sought for. My normal memory is bad, and a similar but much fainter feeling of sudden recollection of a forgotten fact is familiar. But in the abnormal states the recollection is much more instantaneous, much more absorbing, more vivid, and for the moment more satisfactory, as filling up a void which I imagine at the time I had previously in vain sought to fill. At the same time, or perhaps I should say more accurately in immediate sequence, I am dimly aware that the recollection is fictitious and my state abnormal. The recollection is always started by another person's voice, or by my own verbalised thought, or by what I am reading and mentally verbalise; and I think that during the abnormal state I generally verbalise some such phrase of simple recognition as, 'Oh yes—I see,' 'Of course—I remember,' &c., but a minute or two later I can recollect neither the words nor the verbalised thought which gave rise to the recognition. I only feel strongly that they resemble what I have felt before under similar abnormal conditions. I re-enter the current of normal life, as a rule, quickly—sometimes, as far as I can judge from my own movements or other people's evidence, within ten or fifteen seconds; there is never, however, as sudden a rush of returning normal consciousness as there has been of incipient abnormal consciousness; it is more gradual, and it is hard to say when it is complete, as it almost always leads up to a passive and

non-critical mental attitude, in which I feel no originative mental impulse. One point which I almost always feel a tendency to avoid, though I am generally dimly aware of a previous wish to attempt it, is to go over my previous abnormal mental state critically and to give my attention to all its details. But attention seems not to be completely under my control; I sometimes put it off, and delude myself with the impression that remembrance will be just as complete after another five minutes, sometimes let it slip with a feeling of indifference, and sometimes, if I am in company or in any active employment, I have no distinct recollection of any desire for self-criticism or analysis. Accompanying this want of control over reflection I often notice a temporary loss of memory for habitually familiar names or facts, which lasts a minute or two, or sometimes more, after my consciousness seems otherwise normal. This may co-exist, indeed, with so normal a state of consciousness, that I can hardly believe I shall find any difficulty in saying what I want to say, and so I fall now and then into the mistake of beginning without hesitation a sentence which I cannot finish. I have found myself just after a *petit mal* at a London Railway Booking Office, meaning to go to K——, and asking without hesitation for 'Second return to—to—that school, don't you know—' (or some such words) and being a good deal startled at my forgetfulness.

"A *petit mal* has two or three times come on when I have been reading poetry aloud—the line I am reading or just going to read seems somehow familiar, or just what I was trying to recollect, though I may never have seen or heard it before. I recognise my morbid condition and stop, though I have generally sense enough to finish the line or even sentence, and remain silent for a minute or so; then go on again where I left off, recovering my sense of rhythm and metre sooner than my capacity of giving attention to or understanding the words. I do not remember to have made any deliberate effort to go on reading aloud, *coûte que coûte*, throughout a *petit mal*. I have made several rude attempts to go on writing, and have kept four or five specimens of what I have written. They were made in very slight *petits maux*. The writing was done slowly and in a fairly normal hand. I was in the main occupied with the usual impression of recollection, but was dimly aware that I was morbid, and attempted to criticise what I was writing. My impression at the time that I was writing was that the words and sense were quite reasonable, and that I had kept within very familiar and prudent limits of expression. I had found, I thought, just the words I was seeking for. A minute or two later I could see that some of the words were grotesquely *mal à propos*, though I think the grammatical forms of sentence were always preserved. I could not trace any undercurrent of thought or recollection from which the irrelevant words had come.

"*Physical Conditions.*—As to the physical conditions accompanying these mental states I can gather a little from my own consciousness, and have learnt a little more from friendly observers. At the onset I can rarely notice any physical change in myself, my

attention being chiefly occupied with my mental condition; but once or twice when I have been standing near a mirror I have noticed pallor of the face, and I have learnt from others that this is common, and that my eyes have a somewhat staring vacant look as if they were not directed to anything near me, or indeed taking notice of anything particular. In this condition I am told, and in fact occasionally remember, that I often say 'yes,' with an air of complete assent to any remark made to me, whether it is a pertinent answer or not; and further, that I occasionally make a slight half-vocalised sound, whether addressed or not. This latter, I have been told, *is somewhat like a modified and indistinct smacking of the tongue like a tasting movement, and is generally accompanied by a motion of the lower jaw*, and sometimes by some twitching of the muscles round one or both corners of the mouth or of the cheeks, but by no sense of taste in my recollection. I have no clear evidence that one side of the face is affected more than the other, and no clear evidence against it; from what little I can learn, if it is at all unilateral it is rather more on the right side than the left; but the evidence is very scanty. I never notice it myself. I also never notice myself, but learn from others, that sometimes, especially if sitting, I give one or two light stamps on the floor with one foot; and in the only cases where this has been accurately observed it has been with the right foot.

"With the returning normal consciousness I generally feel some superficial flush over the skin, especially over the face, and a slightly quickened and more thumping heart-beat which does not go beyond causing me very slight *malaise*. A very constant symptom is increased urinary secretion, which sometimes makes itself felt in as short a time as five or ten minutes, but usually after a longer interval. The water, if soon passed, is very light in colour, of low specific gravity, once or twice as low as 1005, and contains no albumen.

"The *petits maux* have not been accompanied or followed by hallucinatory sensations of sight, sound, taste, smell or feeling. There has been, I think, no loss of balance. I well recollect in 1878 running across a Swiss glacier, and jumping across many small crevasses when the initial stage of 'aura' came on, and a reflection shot through my mind, that if ever I was likely to pay dearly for the imprudence of going on, it would be then. But I had insufficient control to stop myself and felt no fear, but only a slight interest in what would happen. I went through the familiar sensations of *petit mal* with such attention as I had to give concentrated on them, and not on the ice, and after a few minutes regained my normal condition without any injury. I looked back with surprise at the long slope of broken ice I had run over unhurt, picking my way, I know not how, over ground that would normally have been difficult to me. In the same way a *petit mal* when I was playing lawn tennis did not in the opinion of my adversary make my strokes or judgment of pace and position of balls to be struck any worse than normal. I had no recollection of the strokes during a minute or two.

"I had no *haut mal* before 1874, and since then such attacks have recurred mostly at long intervals, sometimes of as much as eighteen months; during slow convalescence from pneumonia, however; in 1875–6 I had as many as seven or eight in two months. The 'aura' of recollection has preceded all of them, more or less, but is less vivid in my subsequent memory than after a *petit mal*. My evidence as to the subsequent phenomena of the *haut mal* is very incomplete. My loss of consciousness has not seemed longer to those who watched me more than five or ten minutes as a rule, but my loss of memory has been longer and my return to consciousness more gradual. I have not heard that there has been any epileptic cry; the muscular spasms have been variable but generally slight, and not specially localised (except that once I was told of a constant grasping motion of my right arm and hand). In one or two cases the spasms have not been noticed, and the state has been at first supposed to be one of syncope; but some snoring has almost always been noticed before recovery. My subsequent mental condition has been one of indifference and a sense of fatigue; my bodily sensation is, as a rule, of having been lightly bruised all over.

"During the past year (1887), and more especially during the last four months, there has been some change in the symptoms of the *petits maux*, which may be shortly summed up by saying, that there has been less vivid sense of recollection and there have been longer periods of automatism without memory. I think I had best attempt to explain what I mean by two or three instances.

"(1.) In October 1887 I was travelling along the Metropolitan Railway, meaning to get out at the fourth station and walk to a house half a mile off. I remember reaching the second station, and I then recollect indistinctly the onset of an 'aura,' in which the conversation of two strangers in the same carriage seemed to be the repetition of something I had previously known—a recollection, in fact. The next thing of which I have any memory was that I was walking up the steps of the house (about half a mile from the fourth station), feeling in my pocket for a latch-key. I remembered almost at once that I had had a *petit mal* coming on at the second station, and was surprised to find myself where I was. I recollected that I had meant to reach the house not later than 12.45, and had been rather doubtful in the train whether I should be in time. I looked at my watch and found it within a minute or two of 12.45. I searched my pockets for the ticket, which was to the fourth station, found it gone, and concluded that I must have passed the third station, got out at the fourth, given up my ticket and walked on as I had previously intended, though I had no memory of anything since the second station some ten or twelve minutes previously. I imagine that I had carried out my intention automatically and without memory.

"(2.) Again, in November 1887, after dark—about 6 P.M.—I was walking westwards in a London street, when I felt a *petit mal* coming on of which I can remember no particulars. My intention was to walk westwards for about half a mile; my thoughts were

occupied with some books I had been reading in a house which I had just left. With my return of memory (which was incomplete and indistinct) I found myself in a street I did not at first recognise. I was somewhat puzzled, and looked up at the street corners for information as to the name of the street. I read the name "P—— St." which crossed my path at right angles, and with some difficulty realised that I was walking not westwards, as I had been intending, but eastwards, along the street by which I had come, and had, in fact, retraced my steps some three hundred or four hundred yards. I felt no purpose in doing this, no aim at going anywhere in particular, and to save further difficulty, and because I was puzzled, I got into a hansom which was standing still close by me. I have no recollection of giving the driver any orders, and was in a very unreflective state. My impression is that the cab-driver drove quickly to the right house, and I distinctly remember some slight surprise I felt at his knowing the house, and at finding myself giving him a shilling, when I doubt if I could have explained where he came from. Immediately after entering the house I realised tolerably distinctly what had probably happened, and looking at my watch, I calculated that I had not lost more than five minutes by this, if so much.

"(3.) About a fortnight later I was walking by the same route about 10.30 P.M., and again felt a *petit mal* at a point within a hundred yards or so of the one described above. I cannot be certain that a memory of the previous attack recurred to me, but I think it is very probable. My memory again was a blank until I found myself facing eastwards and looking up at the name "P—— St." Then the memory of the previous retracing of my steps recurred to me at once. I more quickly than before gathered together full consciousness, felt a cab unnecessary, walked home, and had no difficulty in writing steadily for about three hours without fatigue.

"In the earlier of this pair of cases (2 and 3) I had no thought whatever of going back to the house where I had been reading, or to any point in that direction; but I believe I am correct in saying that I was thinking of what I had just been reading there. As far as I know, this is the first instance of my changing my intended action *ex proprio motu* in a mental state of which I have no memory. In the companion case (3) I cannot feel sure how much I was influenced by recollection in the earliest stages of the *petit mal*.

"(4.) A fourth occasion is perhaps worth record. I was attending a young patient whom his mother had brought me with some history of lung symptoms. I wished to examine the chest, and asked him to undress on a couch. I thought he looked ill, but have no recollection of any intention to recommend him to take to his bed at once, or of any diagnosis. Whilst he was undressing I felt the onset of a *petit mal*. I remember taking out my stethoscope and turning away a little to avoid conversation. The next thing I recollect is that I was sitting at a writing-table in the same room, speaking to another person, and as my consciousness became more complete, recollected my patient, but saw he was not in the room. I was interested to ascertain what had happened, and had an

opportunity an hour later of seeing him in bed, with the note of a diagnosis I had made of 'pneumonia of the left base.' I gathered indirectly from conversation that I had made a physical examination, written these words, and advised him to take to bed at once. I re-examined him with some curiosity, and found that my conscious diagnosis was the same as my unconscious,—or perhaps I should say, unremembered diagnosis had been. I was a good deal surprised, but not so unpleasantly as I should have thought probable."