exposes to ingratitude, contumely, treachery, danger; and all this without the praise due to heroism, or even the publicity which often inspires and sustains where principle might fail.

Clinical Notes regarding Epileptic Insanity. By ADAM ADDISON, L.R.C.P. Ed., Assistant Medical Officer, Royal Lunatic Asylum, Montrose.

THE following observations are based upon fifty cases, and compiled from notes taken by Dr. Howden and myself. They are published merely as a contribution to the statistics of the subject, which are by no means numerous. Of the cases admitted into the Montrose Asylum during the last eight years, 3·8 per cent. were epileptics. Their physiognomical characteristics are given in the following table:

In 39 males, 11 females—

	M.	F.	Total.
The face was pallid in . .	24	6	30
Lips thick in	20	7	27
Eyelids puffy in . . .	32	9	41
Pupils large in	20	5	25
„ of medium size in . .	19	6	25
„ unequal in . . .	0	2	2

It was observed that the pupils were very variable, as regards size, apparently owing to the frequent vertiginous attacks to which such patients are subjects.

The bodily condition, as regards nutrition, was generally good, and in many cases the tendency was to plethora.

The nutrition was—

	M.	F.	Total.
Plethoric in	16	5	21
Normal in	11	5	16
Defective in	12	1	13

The usual disturbances of motility during the interparoxysmal period were observed in the majority of cases, namely, tremor, tonic and clonic spasm, with imperfect muscular co-ordination, and sometimes paralysis, and, as the result of these, imperfect articulation, tremor of the muscles of the face and hands, want of precision in grasp, and the characteristic straddle in the gait. Those of the patients whose intelligence could be relied on reported that tonic spasm generally occurred in the muscles of the legs and arms, often after they got into bed, and before they became warm. Clonic spasm was observed in the muscles of the legs, arms, and face, and in five

cases it occurred in the form of trachelismus, the symptons being a sudden sense of choking and abortive attempts to speak. It was also noticed that clonic spasm was most marked during sleep, in which some patients were seen to jump and start so violently as to be thrown out of bed while perfectly conscious. Many likewise state that they suffer much from nightmare and terrifying dreams.

In 24 males and 8 females—

	M.	F.	Total.
Tremor was observed in . .	5	1	6
Clonic spasm in	4	1	5
Tonic „	4	1	5
Tremor and clonic spasm combined in	1	1	2
„ tonic „	2	0	2
Tonic and clonic „	2	0	2
Tremor, tonic, and clonic spasm in .	2	3	5
Uncertain	4	1	5
	24	8	32

The following are the results as regards paralysis:

In 31 males, 10 females—

	M.	F.	Total.
There were paralytic in right side .	9	2	11
„ „ left side .	7	2	9
„ on both sides . .	1	0	1
Not paralysed	14	6	20
	31	10	41

These observations differ materially from the experience of Dr. Russell Reynolds, who regards paralysis as one of the rarest conditions of epilepsy. Probably the contradiction may be accounted for by the different character of the cases which fall under the attention of the hospital physician and the medical officer of an asylum. The former generally sees only the recent and hopeful cases, while the practice of the latter lies amongst the most helpless and hopeless, whose nervous systems have been shattered by paroxysms of many years' duration. In this class of cases nothing is more common than to see a patient leaning all to one side in his walk; and on examination it will be found that on this side muscular co-ordination is more imperfect than on the other—that his grasp is less strong and exact —that he flings about his leg more uncertainly, and uses it with a slight drag; it is also on this side that the larger pupil is noticed when there exists any inequality. This paralysis has also been observed to occur most frequently on the side in which the convulsions predominate during the fit; but from the difficulty of obtaining

accurate information on this point in many of the cases, I hesitate to connect the facts in a tabular form. These symptoms become still more interesting when placed beside the observations of Dr. Baume ('Annales Médico-Psychologiques,' tome viii), who points out that there is almost invariably a difference in the weight of the two cerebral hemispheres observed in autopsies of epileptics, and that the convulsions predominate on the side opposite the atrophied hemisphere.

In one series of 50 cases the lowest difference was 15 grammes, and the highest 290, the mean being 50; in another of 20 cases the lowest was 4 grammes, and the highest 159, the mean 40; in the first series one case only presented no difference in the weight of the hemispheres, in the second they were equal in four only. In the post-mortem examinations of epileptics which have been made in this asylum the difference has been noted three times, but it must be admitted that until recently it has not been looked for. Observations made upon the temperature and the pulse coincide generally with those of Dr. Reynolds. In 13 men the internal heat of the body was ascertained by introducing the bulb of a thermometer (Aitkens) into the rectum. The highest temperature obtained was 100·2, the lowest 97·2, the mean being 98·9. It was found that the temperature was highest in those who had suffered from fits during the same day; the lowest was observed in the case of an idiot.

The following table represents the character of the pulse:

Sex and number of cases.	Age.			Frequency of Pulse.		
	Min.	Max.	Mean.	Min.	Max.	Mean.
Males 24	16	69	33·41	58	104	77·87
Females 8	20	42	29·5	72	100	89·5

Quality of Pulse.	M.	F.	Total.
Normal fulness and firmness .	18	5	23
Feeble	6	3	9
	24	8	32

All epileptics from whom reliable information could be obtained were found to suffer more or less from vertigo during the interparoxysmal period, and several were subject to attacks of the petit mal. In demented patients such physical and mental phenomena as sudden changes in the frequency and quality of the pulse, the size of the pupils, the various spasmodic disturbances of the throat, sudden fits of loquacity, excitement, or depression, are explained by the occurrence of vertiginous seizures. These are the chief symptoms of the interparoxysmal period.

The approach of the fits was indicated in twenty-seven out of fifty cases by physical and mental prodromata.

I have adopted Dr. Reynolds's classification, and divided them into four groups, mental and emotional, sensational, motorial, and extrinsic; but as I found that in the majority of cases symptoms of the different groups were conjoined, it appeared to me the more correct plan to state the frequency of such phenomena, rather than to register individual cases by making choice of a single prodroma.

	Special Phenomena.	
I. Mental and emotional.	Depression	8
	Exaltation	5
	Irritability	7
	Drowsiness	1
II. Sensational.	Dizziness	5
	Pain at cardia	0
	Itching of ulcer of face	1
	Itching of legs	1
III. Motorial.	Palpitation of heart	1
	Cramp in leg	1
	„ arm	1
	„ wrist	1
	Twitching of hand	2
	Neck drawn to one side	1
	Loss of motility	1
	Co-ordinated movements	5
	General tremor	1
IV. Extrinsic.	Blue colour under eyes	1
	Lachrymation and salivation	1

It will be seen that in the mental group depression of spirits was the symptom most frequently observed, irritability stands next, and then exaltation. Of the sensational symptoms, dizziness and pain at the cardia are the most prominent; in one the warning showed itself by an itching of an incurable ulcer of the cheek; in another, by itching of the legs. Among the extrinsic prodromata was a blue colour under the eyes in one case, and in another lachrymation and salivation. The patient affected by the latter symptom might be seen before the occurrence of the fit standing with the tears rolling from his eyes, his face flushed, and the saliva dribbling copiously into a spittoon at his feet. The motorial phenomena I can only regard as the first and immediate symptoms of the seizure; they have scarcely warned the patient when they are followed by the paroxysm, but, in accordance with custom, I have included them among the prodromata, though, as will be immediately seen, I have also classed them in another table as what I regard them.

The chief phenomena connected with the actual seizure were observed to be the following:

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In 50 cases—39 males, 11 females—

	M.	F.	Total.
Loss of consciousness was the first symptom in	29	10	39
Muscular cramp or co-ordinated movements .	10	1	11
There bit the tongue during fit . . .	21	6	27
Uttered cry before fit	25	5	30
Fell during fit	39	9	48
Wet their beds during or after fit . .	19	7	26
Had fits during night only	12	3	15
„ both day and night	27	8	35
Span round during fit	4	1	5
Fell on head	3	0	3
Roll and kick	1	1	2
Convulsed most on right side . . .	10	3	13
„ „ left „ . . .	8	2	10
Do not have comatose symptoms . . .	2	1	3

The foregoing symptoms, the loss of consciousness, the cry, the fall, the proclivity of many epileptics to take fits in the night-time only, the predominance of spasms on one or the other side of the body, &c., have been so much discussed by the most competent authorities, that I do not care to enter upon their consideration otherwise than statistically, while I have nothing new to add to what is known respecting the pallor of the face, the dilatation of the pupils, the weakness of the pulse, and the slowness of the heart's action during the seizure. The following table shows the connection as to the time of the seizures with states of excitement:

In 39 males, 11 females—

	M.	F.	Total.
There were always irritable, quarrelsome, and vicious	12	1	13
There became excited and vicious before fit .	6	1	7
„ „ „ after „ .	19	7	26
There presented no mental change . .	2	2	4
	39	11	50

The relation of epilepsy to insanity appears to be fourfold. First, epilepsy occurs as a transient symptom of that general excitement of the nervous system which results in insanity. It may either precede or happen during the course of a maniacal attack. Flemming* points out that the development of puberty is sometimes attended by epileptic seizures, and when the fits are severe and often repeated they are followed by an outbreak of mania or melancholia. I have

* 'Pathologie und Therapie der Psychosen.'

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also seen recurrent attacks of mania begin with an epileptic seizure, and have notes of several cases in which it manifested the same transient form during the course of an inflammatory or congestionary attack. The maniacal paroxysm sometimes subsides after the occurrence of the fit, and cases have been known to date their recovery from seizures of the kind. Secondly, epilepsy, permanent and habitual, may be either the result or the cause of insanity. In the former case it is generally due to an organic cause, such as the formation of tumours and ossifications in the dura mater. I have known it to be developed during the course of a brain disease, which after death was found to be hypertrophy of one cerebral hemisphere. Dr. Hoffman, of Siegburg, has observed it break out in public girls, after they have been pent up in reformatories, and become insane from their too suddenly restrained mode of life. But the third, and by far commonest relation of epilepsy to insanity, is that in which it precedes the disease of mind, and depraves or destroys the mental powers by a series of long-continued shocks to the nervous system, the form upon which most of the observations in this paper are based. Here, too, we find some interesting facts, illustrative of the connection of the two diseases. As we have seen the cure of insanity to date from the occurrence of an epileptic fit, so also cases happen in which habitual epilepsy has been known to disappear after the development of mental imbecility. But the most curious and suggestive relation between the two diseases is the fourth, namely, that of replacement. Thus, a periodical attack may not occur, and its place be taken by a paroxysm of melancholia or mania, which disappears on the recurrence of the fits, but sometimes without this happening. And the same holds good when the two diseases are permanently connected. Here is a case in point.

A. M—, æt. 38, has been subject to epilepsy from infancy, and, with one exception, all the members of the family have been epileptic. He occasionally cries before the fit, bites his tongue, and falls suddenly. The seizures occur both day and night, without warning, and are followed by maniacal excitement, during which he talks incoherently, and has hallucinations of hearing and vision, fancying he sees persons attempting to injure him. They generally occur every fortnight, and it is noticed that if they do not happen at their regular time their place is taken by a fit of excitement, when he becomes maniacal, loquacious, given to singing, and has hallucinations similar to those after the fit.

In the next case the fits are replaced by paroxysms of fury.

A. B—, æt. 18, has been liable to fits since he was a year old. For some months after admission he was observed to be subject to sudden paroxysms of violence, but there were no symptoms of epilepsy, and, when such appeared, they were reported by his atten-

dants as something new. Since then it has been observed that the fits are irregular in their recurrence; sometimes he has many during a week, and at other times many weeks may elapse without a seizure, but during the periods when the fits are absent he is liable to sudden and impulsive fits of fury, during which he rushes instantaneously to the windows, and strikes every one in his way. This condition invariably subsides on the recurrence of the convulsive attacks. Indeed, it would appear from some facts that when there is a greater than usual interval between the fits, or when they habitually recur at long irregular periods, the place of the convulsions is always taken by some equivalent or vicarious symptoms.

This is illustrated by the following case.

J. R—, an idiot girl, æt. 33; lips thick, features heavy and ugly in the extreme; palate arched, and incisor teeth all flattened. Has never menstruated. Her habits, and the little she can speak, are very childish. She is subject to very severe epileptic fits every four or six months, and they are always followed by prolonged coma. In the intervals she is subject to attacks of excitement, during which she may be seen jumping to a considerable height for many minutes continuously, and at these times she is very violent, dashes her head against the walls, bites with great ferocity, and exposes her person to men. When the excitement passes away she becomes depressed and apathetic, sitting in a corner for days.

The impulsive character of these paroxysms, the great expenditure of muscular energy, their alternation with quiet intervals, and the extreme violence and erotomania attending them, leave little room to doubt that they take the place of the regular epileptic fit. These conditions of replacement lead, by a gradual and natural transition, into that class of cases which Morel has called "epilepsie larvée," latent or masked epilepsy. This observer states* that in asylums there are two species of epileptic insanity, one attended by the common convulsive phenomena, another in which these are absent, but which can be diagnosed as an equivalent of epilepsy, by the peculiar symptoms which characterise that disease. These are—"Periodic excitement, followed by prostration and stupor; excessive irascibility, without cause; the manifestation of aggressive violence, marked by instantaniety and irresistible impulse; exaltation of the sensibility, homicidal and suicidal tendencies; intercurrent insane ideas connected with the state of cerebral excitement; exaggerated notions of physical power, of wealth, of beauty, or of intelligence; erotic tendencies, coupled with exalted religious feeling; hallucinations of terror; sensation of luminous atmosphere; horrible dreams or nightmare; gradual progressive debility of the powers of understanding, and especially the memory; loss of recollection of events transpiring

* See 'Journal of Mental Science,' Jan., 1863.

during the paroxysms, the insane symptoms of each periodic attack having, both with reference to the ideas which occupy the mind and to the actions committed, the same identical character; and, lastly, the violence and duration of the delirious excitement determined by the duration of the remission." The best proof that these cases are really due to latent epilepsy is that, after months, or even years, convulsive phenomena make their appearance. As an instance of this, I give the following case.

M. F—, æt. 65, was admitted three years ago, but was stated to have been partially insane for several years previously. At the time of her admission she was highly excited, and incoherent in her talk; imagined that some persons had conspired to injure her; memory seemed quite lost. On observation it was found that she became excited every day after dinner; that during these paroxysms she was very violent, and used the most disgustingly obscene language; that she had no knowledge of the identity of persons, and invariably mistook her attendant for her daughter; that she could read, but had no memory of past or recent events; and that these symptoms were always the same with every paroxysm. During her quiet intervals she had very pious fits, and often repeated a form of prayer which she was in the habit of using. Latterly these paroxysms of excitement occasionally terminated with a fit of unconsciousness, during which she fell, and exhibited slight co-ordinated movements of the hands, but still later these symptoms became developed into the complete epileptic fit, attended by the cry, fall, and very severe convulsions.

Many other cases of the same nature may be recognised by the short duration of the paroxysms and the rapidity with which they recur; by the partial tetanic rigidity which accompanies them, the extremely sudden outbreak of mental phenomena, such as rage or incoherent delirium, and the equally rapid return to quiescence.

The following are my observations on the urine of epilepsy. When the fits are severe, occur for two or three days in succession, and are attended by mental excitement, the quantity of the urine is greatly diminished, in accordance with the law which regulates this secretion in maniacal paroxysms. Accompanying this diminution of the quantity of fluid, there is also a lessening of the amount of chloride of sodium, urea, phosphoric and sulphuric acids. The specific gravity is high, and there is an abundant deposit of urates. These facts are brought out in the following cases.

J. M—, æt. 50, an epileptic; fits occur every month, several in succession, for one or two days, and he becomes very morose, vicious, and dangerous.

PAROXYSMAL PERIOD.						
Days.	Quantity.	Sp. gr.	Cl Na.	Urea.	PO_4.	SO_3.
1	14·5 oz.	1033	21·14	325·64	14·44	28·61
2	17·0	1031	44·62	374·35	18·16	24·68
3	16·5	1034	43·41	375·37	26·27	43·67
Total	48·0	1032	109·17	1075·36	58·87	93·96

INTERPAROXYSMAL PERIOD.						
Days.	Quantity.	Sp. gr.	Cl Na.	Urea.	PO_4.	SO_3.
1	93·5 oz.	1016	54·54	572·68	29·60	29·38
2	99·5	1014	35·11	418·70	31·50	29·78
3	89·0	1013	64·89	414·00	31·15	26·64
Total	282·0	1014	154·54	1405·48	92·25	85·80

Here is also a second analysis of the urine during the paroxysmal period in the same case; this time he made water so sparingly and irregularly that it was only obtained every forty-eight hours.

PAROXYSMAL PERIOD.						
Hours.	Quantity.	Sp. gr.	Cl Na.	Urea.	PO_4.	SO_3.
48	35·5 oz.	1032	94·79	687.23	42·25	49·30
48	36·0	1031	52·50	645·75	48·00	59·26
24	32·5	1023	18·95	398·12	29·79	27·72
Total	101·0	1028	166·24	1731·10	120·04	136·28

The average of these five days is less than the average of the three interparoxysmal days.

P. H—, æt. 24, an epileptic; fits occur monthly, and he becomes excited, maniacal, and violent.

PAROXYSMAL PERIOD.						
Days.	Quantity.	Sp. gr.	Cl Na.	Urea.	PO_4.	SO_3.
1	31·0 oz.	1021	67·81	379·75	22·74	21·76
2	26·5	1030	54·10	456·02	26·07	23·80
3	40·5	1025	59·06	472·50	10·70	26·68
Total	98·0	1025	189·97	1308·27	59·51	72·44

Interparoxysmal Period.						
Days.	Quantity.	Sp. gr.	Cl Na.	Urea.	PO_4.	SO_3.
1	95·0 oz.	1017	152·39	881·19	60·59	45·51
2	91·5	1014	226·84	800·62	32·58	27·39
3	85·0	1015	111·56	614·83	40·40	34·36
Total	271·5	1015	490·79	2296·64	133·57	107·26

There is a second analysis in this case, also with the same result.

Paroxysmal Period.						
Days.	Quantity.	Sp. gr.	Cl Na.	Urea.	PO_4.	SO_3.
1	21·25 oz.	1031	46·48	570·20	33·10	20·67
2	20·75	1030	39·33	502·18	14·07	19·30
3	33·00	1029	33·68	596·75	20·40	31·60
Total	75·00	1026	119·49	1669·13	67·57	71·57

Helen C—, æt. 26, an epileptic; fits occur every three weeks; she becomes very excited and violent, and talks incoherently.

Paroxysmal Period.						
Days.	Quantity.	Sp. gr.	Cl Na.	Urea.	PO_4.	SO_3.
1	22 oz.	1030	77·00	385·00	31·18	23·00
2	7	1034	21·41	136·79	8·17	11·00
3	7	1030	20·41	147·00	5·37	7·85
Total	36	1031	117·82	368·79	44·72	41·85

Interparoxysmal Period.						
Days.	Quantity.	Sp. gr.	Cl Na.	Urea.	PO_4.	SO_3.
1	35·0 oz.	1012	20·41	240·20	22·00	7·85
2	73·5	1006	42·87	192·93	16·21	9·80
3	51·0	1012	29·48	267·75	21·25	15·87
Total	159·5	1010	92·76	700·88	59·46	33·52

These were very severe cases, and I am quite convinced that the amounts of the urinary excreta of the paroxysmal period should not be regarded as anything like an approximate measure of tissue change, but that there must have been considerable retention in the blood. Subsequent observations of maniacal cases have tended to strengthen this conviction; for I have noticed that when the urine

is scanty, a small bleeding from the arm is followed by a greatly increased quantity of this fluid and its constituents.

This would appear to point to the suggestion, that the kidney, participating in the general excitement of the system, becomes congested and refuses to do its work. How far this conjecture may also apply to cases of retention of the urinary constituents in fever I leave to others more conversant with such diseases to decide. I do not, however, wish to dogmatise upon this point, because my observations are too few to justify any rigid deduction.

In the milder cases, where there is only one fit, and unattended by mental excitement, I have not found much difference between the urine of the day on which the fit occurred and that of the days preceding and following the paroxysm; at least not more than can be explained by the condition of the atmosphere and the quantity of food taken. I give two instances as an illustration.

The first is the case of Helen C—, previously given. This time she had only one fit.

Condition.	Days.	Quantity.	Sp. gr.	Cl Na.	Urea.	PO_4.	SO_3.
No fit	1	55·5 oz.	1009	56·65	210·43	16·65	16·55
One fit	2	38·5	1007	22·45	140·36	10·90	8·56
No fit	3	40·0	1007	21·50	143·33	8·63	5·93
,,	4	41·5	1012	24·27	157·36	14·51	7·38
,,	5	56·0	1007	25·83	163·33	15·86	7·47

George D—, æt. 33:

Condition.	Days.	Quantity.	Sp. gr.	Cl Na.	Urea.	PO_4.	SO_3.
No fit	1	65·5 oz.	1022	66·86	611·33	52·40	30·11
,,	2	63·0	1015	31·23	588·13	36·75	25·23
One fit	3	69·5	1021	81·08	750·02	64·70	48·41
No fit	4	62·5	1020	40·10	692·70	42·27	26·17
,,	5	69·25	1019	80·79	919·00	40·39	30·80
,,	6	80·0	1016	63·00	793·33	44·00	23·03
,,	7	75·5	1020	83·67	770·72	45·30	35·85
,,	8	79·5	1022	92·75	811·56	71·55	48·31

In some twenty cases I have examined the urine for sugar, but never succeeded in detecting it, although I have tested it at all times, both immediately after the fit and also hours afterwards.

The last point to which I wish to call attention in connection with epilepsy is the action of narcotics upon the brain. In the course of an inquiry on this subject, I found that large doses of opium, belladonna, and cannabis Indica, could be taken with great impunity by epileptic dements; that, in fact, it was often difficult, and in some cases impossible, to produce symptoms of cerebral narcotism, and that this is in proportion to the degree of dementia, so

that the toleration of narcotic drugs forms a kind of gauge of the mental state of a patient; in fact, all demented patients appear to tolerate narcotics with as much impunity as it is well known maniacs can do.

At the time I made these observations I was not aware that Dr. Bucknill had pointed out the same fact, which he had observed in the course of treatment.

CLINICAL CASES.

Cases treated by the Turkish Bath. By EDGAR SHEPPARD, M.D., Medical Superintendent of the Male Department of Colney Hatch Asylum.

THERE is no one, I suppose, engaged in the treatment of insanity so well satisfied with the physical and moral means at his disposal for his great encounter with the most terrible of diseases, who will not welcome every additional aid which time and the development of science may place within his reach. Even if the disciples of our specialty are sanguine of ultimate success in particular forms and types of disease, they will regard with no slight favour anything which can shorten the duration of that which is abnormal and destructive.

It has seemed to me always that there is a greater uncertainty as to the action of therapeutic agents among those who are insane than among those of whose mental integrity we are assured. Just as under the anxious wear of expectation—of "hope deferred"—or the sudden pressure of startling news, the curtained eyelids will not fall, so under the excitement of mania or the depression of melancholia the material structure makes itself up, as it were, for resistance of ordinary appliances, and becomes tolerant of an amount of remedial aid, in the shape of stimulants or sedatives, which is altogether remarkable. This tolerance may, perhaps, find its solution in the imperfect nutrition, and the defective powers of assimilation which are known to obtain largely in mental diseases. But it is more reasonable to suppose there is on the one hand a development, and on the other a suppression, of nervous force, which are alike capable of resisting the action of every remedy.

For instance, observe the amount of tartar emetic which can be borne in certain forms of maniacal excitement, without the stomach,

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