THE MENTAL CONDITION IN EPILEPSY IN RELATION TO PROGNOSIS.¹

BY WILLIAM ALDREN TURNER, M.D. EDIN.,
F.R.C.P. LOND.,

PHYSICIAN TO OUT-PATIENTS AT THE NATIONAL HOSPITAL FOR THE
PARALYSED AND EPILEPTIC, QUEEN-SQUARE, AND AT KING'S
COLLEGE HOSPITAL; AND VISITING PHYSICIAN TO THE
COLONY FOR EPILEPTICS, CHALFONT ST. PETER.

IN a previous communication to this society² I dealt in general terms with the prognosis and curability of epilepsy, with reference more particularly to the convulsive element. In the present paper a special study has been made of the influence of the mental condition in epilepsy upon the prognosis of the disease.

That the mental condition in epilepsy has been the subject of much investigation is apparent from a review of most of the treatises upon the disease. Morel speaks of the "epileptic character" and other writers refer to the characteristic loss of memory and irritability of temper shown by many epileptics. Reference is also not uncommonly made to epileptic insanity, but authorities differ as to the frequency and causation of a disordered mental state. Whether, indeed, it is an essential feature of the disease, whether epileptics tend invariably towards dementia as a natural consequence of the malady, or whether it is dependent upon the frequency, the character, or the severity of the seizures, is the subject which will now be brought under discussion.

A brief reference may first be made to the proportion of epileptics who become mentally afflicted according to the statements of different writers. Esquirol,³ for instance, stated that of 385 epileptic women observed in the Salpêtrière, 73 per cent. were mentally afflicted. Russell Reynolds⁴ referred to the fact that of the 62 cases studied by himself, 38 per cent. were free from any mental failure, 46 per cent. showed some degree of mental impairment, and 14 per cent. were demented. Wildermuth⁵ mentioned that the percentage varied according to whether the cases were observed inside or outside an institution. From the observation of his institutional cases he found 78 per cent., and of those outside the institution 47 per cent. mentally afflicted. Habermaas,⁶ who has studied the mental condition in detail amongst the patients attending the Epileptic Institute at Stettin, gives the following figures: 17·3 per cent. were intellectually normal, 21 per cent. were able to earn wages, 30 per cent. could do some work, and 49 per cent. were so demented that they were unable to work at all. Of those patients who were inmates of the institution only 13 per cent. were intellectually normal and 22 per cent. were demented, while the remainder showed intermediate degrees of mental failure. Some further facts mentioned by Habermaas may be added. He refers to Tigges, who found 23 per cent. out of 124 epileptic children mentally defective, and to Pelman, who found 50·8 per cent. of epileptics mentally healthy. The above-mentioned facts show that in the opinion of many writers upon epilepsy mental failure is more common than mental health and that this is true whether the patients are observed inside or outside an institution for epileptics.

THE MENTAL CONDITION IN EPILEPSY.

The mental state in epilepsy is usually described under two heads: first, that which may be regarded as incidental to the seizures; and, secondly, the interparoxysmal condition. The former heading includes all those delusional, maniacal, and melancholic states which precede or succeed more especially the major convulsions and which may be considered as constituting epileptic insanity, while the latter embraces the mental attitude and characteristics of the patient between the seizures, and may with confidence be looked upon as the typical epileptic mental condition. It is therefore the latter element of the disease which will receive detailed consideration in the following remarks.

Following upon the lines laid down by Reynolds,

Habermaas, and others, sane epileptics have been divided, according to their interparoxysmal condition, roughly into four classes, showing slight, profound, or intermediate degrees of mental deficiency, and the general features of those classes may be briefly described as follows.

Class A.—In this division are included all those epileptic individuals in whom no mental impairment can be detected. They may be regarded as differing in no way from normal persons in the same social sphere and with similar educational advantages; the memory is good, they are bright, active, and intelligent, and they are capable of earning their own living; only in rare instances do they show the epileptic face. Their physical condition is good. For all practical purposes they may be regarded as normal.

Class B.—This class, to which the majority of epileptics belong, includes those who exhibit the first degree of mental enfeeblement, which is characterised mainly by some defect of memory, more especially a forgetfulness of recent events. In other respects their mental condition is good, they have fair intelligence and capacity for work, they are able to earn their living and to attend to their several duties. Their physical condition varies. A considerable proportion show the epileptic face.

In *Class C* are found those cases which present the second degree of mental impairment. In addition to an impaired memory there are defective power of initiation and capacity for work which, however, may be well done under direction and supervision. They are slow in comprehension and are often lazy. Many of them are irritable and passionate. About 50 per cent. show the epileptic face.

Class D contains those who show the third or most pronounced degree of dementia. They present the typical features of epileptic dementia—viz., a very defective memory, confusion of ideas, poor capacity for work even under direction, absence of initiative, and a slow and dull comprehension. Although not legally insane, they require supervision. Their physical condition is as a rule good, they eat heartily, and sleep well. The majority have the epileptic face.

Under these heads the mental condition in epilepsy will receive consideration, but a passing reference may be made to certain elements in the mental state which will not be specially considered later. I refer to the *epileptic temperament*.

Epileptics are usually of a sociable disposition. The majority are possessed by a religious fervour which, forming a marked feature of their disease, contrasts strongly with their actions, these being mostly perverted, passionate, or even immoral. On the whole they are self-opinionated and possess a conceit and an assurance which are out of all relation to their achievements. Their mental perspective is in consequence entirely blurred and disproportioned, giving to their views and methods an importance which cannot be legitimately claimed for them. While admitting of striking exceptions their want of initiative is characteristic. On this account, although some are good workers, most require supervision and direction. Points also to be observed in the epileptic character, no doubt the direct consequences of the malady, are lethargy and laziness, combined with an extreme pugnacity and hastiness which make them contentious and difficult to live with.

Of the more purely mental characteristics I would refer in the first place to the temporary dulling of the memory and of the finer mental faculties which is to be observed during a temporary increase in the frequency of the fits, more especially observable at the commencement of the disease. This mental clouding should not be mistaken for the beginning of epileptic dementia; it is a common mental phase of many of the patients at the time of their admission to the epileptic colony and in the majority of cases it clears up under the judicious administration of bromides or when the patient is removed from unsatisfactory domestic or other environment. Of these characteristics, I would mention, secondly, the fleeting irritability, lethargy, impairment of memory, and even delusional state which not infrequently precede for a day or two the onset of a fit or fits. This is a condition well worthy of careful recognition, as those who live with epileptics are often able to predict a seizure. This state is, however, prodromal to the attacks and is not considered as evidence of interparoxysmal mental failure.

THE STATISTICS.

The cases forming the material for this paper are those which have been under care and treatment at the Colony

¹ A paper read before the Royal Medical and Chirurgical Society on March 22nd, 1904.

² Transactions of the Royal Medical and Chirurgical Society, vol. lxxxvi., p. 259.

³ Esquirol: Des Maladies Mentales, &c., Paris, 1838.

⁴ Russell Reynolds: Epilepsy, London, 1861, p. 43.

⁵ Wildermuth: Quoted by Habermaas.

⁶ Habermaas: Allgemeine Zeitschrift für Psychiatrie, vol. lviii., p. 243.

for Epileptics, Chalfont St. Peter. Such cases lend themselves the more readily for observations upon the mental characteristics of epilepsy, as previously to admission they have probably experienced some form of treatment and have become in the majority of instances confirmed epileptics. For various reasons particular care is taken in the selection of the cases admitted to the colony. Mere frequency or severity of the fits does not disqualify patients for admission, but the following are, if at all possible, refused: (a) Those who from physical causes are not sufficiently strong to undertake some kind of active work; (b) those who from habitual irritability of temper and awkwardness of disposition would not live in harmony with their fellows or be amenable to rules and regulations; and (c) those who are imbecile, demented, delusional, or liable to dangerous impulses. In this way an attempt is made to separate the sane from the insane epileptic. The cases therefore which form the subjects of the present observations are so far as possible illustrative of the mental condition characteristic of epilepsy as met with outside asylums for the insane. There are several obvious advantages in studying epileptics in such an institution as an epileptic colony. There is, first, the fact that the patients are under constant supervision and treatment; secondly, the mode of life, the diet, and the general care and hygiene are uniform; and, thirdly, the work is apportioned according to individual capabilities and tastes.

The observations have been conducted over periods varying from six months to ten years. The number of fits is recorded on specially designed charts, whilst the mental condition and the working capabilities of the patients are noted from time to time. Treatment by bromides is reduced to a minimum, only a few patients receiving more than the 30 grains of bromide of potassium prescribed at bedtime. The total number of cases upon whom observations have been made is 161; of these 102 are males and 59 are females. They include all ages from 14 to 50 years. Only one patient was admitted over 50 years of age—viz., 58. In the study of the cases the statistical method has been adopted and the results are recorded in percentages. Although, as elsewhere pointed out, objections may be raised against this method it is deemed to be the best available and the results show a marked uniformity when considered from various points of view.

STATISTICAL FACTS BEARING UPON THE INTERPAROXYSMAL MENTAL CONDITION.

The several varieties and degrees of the interparoxysmal mental state in epilepsy, the relation to the various stages and types of the disease, and the bearing upon prognosis will be discussed in detail under the following headings: (1) sex; (2) hereditary predisposition to epilepsy and insanity; (3) duration of the disease from the commencement of the convulsions; (4) the age of the patient at the onset of the disease; (5) the character, type, and combination of the seizures; (6) the frequency of the seizures; and (7) the facies epileptica.

1. *Sex*.—In this and the following tables epileptics have been classified according to the degree of mental impairment already described into four subdivisions:—

TABLE I.—*Giving the Total Number of Males and Females, with their Percentage Frequency in the Four Subdivisions of Mental Failure.*

Mental class.	Males.	Females.	Total.	Total percentage.
A ...	9 (8.8 per cent.)	13 (22.0 per cent.)	22	13.6
B ...	35 (34.3 ")	16 (27.2 ")	51	31.6
C ...	29 (28.4 ")	12 (20.3 ")	41	25.4
D ...	29 (28.4 ")	18 (30.5 ")	47	29.1
Totals	102	59	161	99.7

From this it appears that the greatest number of epileptics (31.6 per cent.) were found to belong to Class B and to show only the slightest or first degree of mental impairment. But if, on the other hand, the table be so subdivided that Classes A and B, C and D be bracketed together, it will be found that 45 per cent. belong to the former and show no, or only slight, mental deficiency, while 54.5 per cent. belong to the latter and show mental deterioration in its most pronounced forms. It is therefore obvious that the cases herein tabulated give a larger proportion which exhibit mental deterioration of a marked type.

It should, however, be pointed out that the above percentages do not faithfully depict the mental state of

epileptics in general, as it is obvious that those cases which seek treatment at a colony do so on account of some mental disability which prevents them earning a living under ordinary conditions. Secondly, if the table be read in vertical instead of horizontal columns, it will be seen that a larger percentage of women (22 per cent.) escape the deteriorating influence of epilepsy than men (8.8 per cent.); but that when dementia supervenes and reaches its most pronounced form a larger percentage of women (30.5 per cent.) are affected than men (28.4 per cent.). The most frequent mental condition in males is seen to be a slight impairment of the memory and a blunting of the higher mental faculties (Class B).

If these figures are compared with those given by Habermas a close correspondence will be found to exist between them and the cases observed at the Stettin Institute, as will be apparent from Table II. :—

TABLE II.

	Stettin Institute.	Chalfont Colony.
Intellectually normal ...	13 per cent.	13.6 per cent.
With poor memory ...	20 "	31.6 "
Feeble-minded ...	41 "	25.4 "
Demented ...	22 "	29.1 "
Total cases ...	226	161

2. *Hereditary disposition*.—The hereditary tendencies referred to under this heading are epilepsy and insanity. On account of the difficulty in obtaining satisfactory information on these points a large number of cases have had to be eliminated owing to the absence of any note either establishing or disproving such a family disposition. Of the total of 161 cases there was no note of a heredity to either epilepsy or insanity in 73. Table III. shows the result of the investigation among the remaining 88 cases:—

TABLE III.—*Showing the Presence or Absence of a Hereditary Disposition in 88 Cases.*

	A.	B.	C.	D.	Total.
No known heredity ...	11	18	9	11	49
Epilepsy { Paternal ...	0	8	2	3	29
{ Maternal ...	4	5	5	2	
Insanity ...	1	2	2	5	10
	16	33	18	21	88

The distribution and percentages are therefore the following in the several mental classes:—

In A there are	5 cases out of 16 with hereditary tendencies, or 31%
" B "	15 " 33 " 45%
" C "	9 " 18 " 50%
" D "	10 " 21 " 47%

The facts, therefore, which may be deduced from Table III. are that those epileptics who show no mental impairment (Class A), or only some impairment of memory (Class B), present a lower percentage with hereditary neurotic tendencies than those cases which exhibit dementia in its more pronounced forms (Classes C and D). This fact, taken by itself, points to the deteriorating influence which a family disposition to epilepsy or insanity has upon the mental condition of those who subsequently develop epileptic seizures.

The table may profitably be compared with one which was given in a previous paper⁷ to illustrate the effects of a hereditary history upon the general results of treatment in epilepsy. From this it was seen that of those cases which had a hereditary disposition to epilepsy 36 per cent. became confirmed epileptics, while of those without such history only 19.2 per cent. became confirmed.

The general deduction, therefore, which may be drawn from the above facts is that a family tendency to either epilepsy or insanity, although offering no obstacle to the arrest of the seizures in favourable cases, materially increases the probability of the disease becoming confirmed and the supervention of dementia.

3. *Duration of the disease*.—The influence of the duration of the disease upon the degree of mental decrepitude has been regarded by many writers as of much significance. In opposition to the commonly expressed opinion upon this matter Russell Reynolds held to the belief that the duration of epilepsy from the commencement of the seizures was without influence upon the mental condition of the epileptic. A table has therefore been constructed with a view to

⁷ Transactions of the Royal Medical and Chirurgical Society, loc. supra cit.

throw further light upon this part of the subject. A total of 160 cases has been used in the construction of Table IV., which gives the duration of the disease in quinquennial periods, with the number and percentage frequency of the cases in the four classes of mental disability. It should be specially borne in mind that the term "duration" here signifies the length of the disease as indicated by the epileptic seizures and not of the mental impairment alone.

TABLE IV.—*Showing the Duration of the Disease and the Number and Percentage Frequency of the Cases in the four Mental Classes.*

Duration (years).	A.	B.	C.	D.	Total.
Under 5	6 (27·2%)	10 (45·0%)	3 (13·6%)	3 (13·6%)	22
6 to 10	13 (30·9%)	10 (23·8%)	7 (16·6%)	12 (28·5%)	42
11 „ 15	1 (3·1%)	10 (31·2%)	10 (31·2%)	11 (34·3%)	32
16 „ 20	1 (3·5%)	4 (14·2%)	10 (35·7%)	13 (46·4%)	28
21 „ 30	1 (4·7%)	8 (38·0%)	4 (19·0%)	8 (38·0%)	21
Over 30	1 (6·6%)	6 (40·0%)	7 (46·6%)	1 (6·6%)	15
Mean dura- tion... ..	3·8 years.	8 years.	6·8 years.	8 years.	160

From a consideration of Table IV. the following general deductions may be made: 1. That under five years' duration there is a considerably greater percentage of cases with no mental impairment, or merely some interference with the memory (Classes A and B, 72 per cent.), than of those with well-marked mental deficiency (Classes C and D, 27 per cent.). 2. That of those cases in which the disease has existed from six to ten years there is a slightly greater percentage in Classes A and B (54·5 per cent.) than in Classes C and D (45 per cent.). 3. But that if the convulsions have lasted for periods over 10 or 11 years only a trifling percentage of cases are to be found in Class A, the majority showing the mental characteristics of Classes C and D. 4. It should, however, be especially pointed out that in a very few cases the disease may have lasted for periods of 30 or more years without any obvious mental impairment.

It has been stated by Russell Reynolds that if the mean duration of the disease in the several classes be taken it will be found that its influence upon the mental condition is trivial. Further reference to Table IV. will show that the mean duration of the disease in Class A is 3·8 years, while that of Classes B, C, and D varies from 6·8 to 8 years. There is not, therefore, that progressive increase in mean duration in the several mental classes that might be expected, for the difference between the mean duration of Class A, which contains those cases without any obvious mental impairment, and Class D, comprising those with the greatest degree of dementia, is about four and a half years, being practically the same as that between A and B, in which latter class we find those with merely some impairment of memory. It may therefore be concluded that although the duration of epilepsy from the commencement of the seizures is a potent factor in determining the subsequent mental condition it is not the only influence in the production of dementia.

4. *Age at onset.*—There is a total of 157 cases in which the age at onset of the disease was known. In order to gauge the influence, if any, which this factor has in determining the subsequent mental condition of the patient a table has been constructed giving the number and percentage frequency of epileptics in the four mental classes, the age at onset being subdivided into quinquennial periods from birth to 35 years.

TABLE V.—*Showing the Age in Quinquennial Periods at Onset of the Fits, with the Number and Percentage Frequency in the Four Mental Classes.*

Age (years).	A.	B.	C.	D.	Total.
0 to 5	1 (3·3%)	9 (30·6%)	9 (30·0%)	11 (36·6%)	30
6 „ 10	3 (11·5%)	8 (30·7%)	7 (26·9%)	8 (30·7%)	26
11 „ 15	10 (18·1%)	15 (27·2%)	17 (30·9%)	13 (24·5%)	55
16 „ 20	7 (24·1%)	8 (27·6%)	5 (17·2%)	9 (31·0%)	29
21 „ 25	0	4 (57·1%)	1 (14·2%)	2 (28·5%)	7*
26 „ 30	1 (16·6%)	1 (16·6%)	1 (16·6%)	3 (50·0%)	6*
31 „ 35	0	2 (50·0%)	0	2 (50·0%)	4*
					157

* The small number of cases shown here is due to the fact that at the epileptic colony epileptics are preferably admitted under 20 or 21 years of age.

From Table V. we may deduce the following general conclusions: 1. That a low percentage of the cases forming

Class A is to be found amongst those epileptics in whom the disease commences in early childhood; amongst them also is to be found a high percentage of those showing profound mental impairment and if we exclude those in whom the disease commenced after 21 years of age owing to the smallness of the numbers the lowest percentage of cases with mental integrity and the highest with mental infirmity are to be found amongst those epileptics in whom the disease commences in infancy and early childhood. 2. From the first quinquennial period onwards to that of 16 to 20 years of age the percentage of cases showing no obvious mental deficiency progressively increases until in the fourth quinquennium (from 16 to 20 years) a greater percentage of cases is to be found in the combined Classes A and B (51·7 per cent) than in the combined Classes C and D (48·2 per cent.). 3. No general deductions may be safely drawn from the cases in the succeeding quinquennial periods owing to the fewness of the cases observed, but it may be said in general terms that in epilepsy commencing over 21 years about an equal percentage show only impairment of memory (Class B) and the higher degrees of mental deficiency (Classes C and D).

These results are at variance with what was noticed by Russell Reynolds working along similar lines. This observer noted that whether the disease commenced early or late in life more cases were to be found in Classes A and B than in C and D—in other words, "that the mind is not specially affected in those whose epilepsy begins early, neither is it in those whose disease is late in its development" (p. 166, op. cit.). On the other hand, the results obtained in this present research support the contention of most of the older writers on epilepsy and confirm what has been pointed out in a previous article upon general prognosis (loc. cit., p. 268)—viz., that epilepsy commencing in infancy and childhood is least favourable for arrest of the fits and most favourable for the production of confirmed cases. It is also found that the common type of epilepsy—that commencing during the period of puberty—is most suitable for arrest of the seizures and least likely to be associated with mental infirmity.

5 *Character of the fits.*—The character of the epileptic seizures has for long been regarded as an important factor in determining the mental condition. It is generally accepted that the petit mal variety exerts a greater deteriorating influence upon the mind than the convulsive or grand mal type. This is no doubt the common experience of those through whose hands numbers of epileptics pass. A table has therefore been constructed to show the effect of the two common types of seizure upon the mental state. A total of 159 cases has been used in whom the character of the fits was definitely known.

TABLE VI.—*Showing the Percentage Frequency of the Four Mental Classes in the Common Types of Epilepsy.*

Type.	A. Per cent.	B. Per cent.	C. Per cent.	D. Per cent.	Total.
Grand mal only	24·3	27·0	27·0	21·6	74
Petit mal only	7·1	42·8	21·4	28·5	14
Combined grand and petit mal	4·2	32·8	25·3	38·9	71
					159

The grand mal type, therefore, when occurring alone is not found to be characteristically accompanied by profound mental impairment, for the table shows an almost equal percentage of cases in the several mental classes. On the other hand, the greatest frequency and highest degree of dementia are to be found in those cases which are characterised by a combination of the grand and petit mal attacks, only 4 per cent. of such cases being found without any obvious mental impairment.

The general deductions therefore are:—(1) Mental deterioration is found in association with both types of seizure, but its presence is less frequent in those cases in which the grand mal is the main expression of the disease; (2) freedom from mental impairment is also found in both types but to a minimal extent in those cases characterised by petit mal whether alone or in conjunction with grand mal; (3) the mind is more frequently affected to a slight extent (Class B) in those cases in which the petit mal seizures occur alone; (4) the mind attains its most universal and profound impairment when the disease is manifested by a combination of grand and petit mal attacks. In amplification of these statements it may be

mentioned that figures have been brought forward to show (loc. cit., p. 274) that the grand mal seizures are the most readily influenced by treatment, while distinctly less favourable are the cases of combined grand and petit mal.

6. *Frequency of the seizures.*—In order to facilitate the consideration of the influence of the frequency of the epileptic attacks upon the mental condition the fits have been divided into those which may be conveniently counted by the day, the week, the month, the quarter, and the year. There have been added in a separate column those whose incidence is especially in series, while a special group has been formed of those cases in which the fits have been arrested.

In an institution such as the Colony for Epileptics it is a comparatively easy matter to register the number of the seizures and at the Chalfont Colony this is done on specially constructed charts so that at a glance there can be seen the daily, weekly, monthly, &c., incidence of the seizures, whether grand mal or petit mal in character, and whether they occur by day or during sleep. By fits occurring in series I refer to those specially interesting cases where, in place of one or two fits occurring at a time, series of fits, sometimes amounting to several score, occur over a short period, to be followed by a variable interval of freedom before the succeeding batch ensues.

TABLE VII.—*Showing the Percentage Frequency of the Attacks in the Four Mental Classes.*

Frequency.	A. Per cent.	B. Per cent.	C. Per cent.	D. Per cent.	Total.
Daily (one or more) ...	0.0 ...	17.4 ...	27.9 ...	55.5 ...	18
Weekly (one or two) ...	1.3 ...	26.3 ...	33.3 ...	39.0 ...	72
Monthly (one or two) ...	25.7 ...	48.5 ...	17.1 ...	8.5 ...	35
Quarterly (one or two) ...	57.1 ...	14.2 ...	28.5 ...	0.0 ...	7
Yearly (one or two) ...	50.0 ...	50.0 ...	0.0 ...	0.0 ...	8
In series ...	7.6 ...	23.0 ...	23.0 ...	46.1 ...	13
Arrested cases ...	50.0 ...	16.6 ...	16.6 ...	16.6 ...	6

159

At the first glance there will be noticed a definite relation between the frequency of the seizures and the mental state to such an extent that when the fits are of very frequent recurrence (daily), none of the patients were without obvious mental impairment, over 50 per cent. of them being in Class D, and therefore exhibiting the highest degree of dementia. On the other hand, if the seizures are so infrequent as to be counted by the quarter or year, over 50 per cent. were found in Class A while none at all were grouped in Class D. Between these extremes there are various gradations, so that the general statement may be made that there is a direct relationship between the frequency of the seizures and the degree of mental impairment—the more frequent the attacks the more common and profound the associated dementia.

If attention is now directed to those seizures the recurrence of which is characterised by batches, it will be observed that in this type we are dealing with cases unfavourable to the maintenance of mental integrity, considerably more than double the number of such patients being found with the severer grades of mental deficiency (69.1 per cent.). In this type of epilepsy, therefore, we are confronted with a variety of the disease prone to the development of dementia.

The mental state of those cases in which the seizures have been arrested, either with or without treatment, presents features of great interest, for the table shows that even when the fits are arrested there is not necessarily an unimpaired mental state remaining—that is to say, that arrest of the seizures does not *ipso facto* imply arrest of the disease. The significance of this will be considered with other points in a later paragraph.

Nothing illustrates more forcibly the severity of the disease than the frequency of the seizures, for in addition to the close association between frequency of seizures and mental deterioration there is a remarkable relation between the frequency and the arrest of the fits. Attacks which recur every three or four months or once or twice a year show the highest percentage of arrested and the lowest percentage of confirmed cases; and the converse also holds good, in that attacks recurring so often as several times a day show no cases of arrest (op. cit., p. 273) just as in Table VII. they show no cases of mental integrity.

7. *The facies epileptica.*—The close relation which exists between mental disability and facial expression is nowhere more readily seen and studied than in cases of confirmed

epilepsy. So characteristic indeed is the facial appearance of many epileptics that the term "*facies epileptica*" has been applied to it. Although difficult to define it is readily discerned by those who are in the habit of treating large numbers of epileptics. It may, in general terms, be described as an expression of dulness and heaviness, with an absence of emotional mobility of the features. It differs from that of the ordinary dement by a particular expression which stamps the individual as an epileptic. That the epileptic appearance is largely dependent upon the mental attitude may be seen from Table VIII., which has been constructed to show the percentage frequency of the *facies epileptica* in the four mental classes.

TABLE VIII.—*Showing the Frequency of the Facies Epileptica in the Mental Classes.*

	A.	B.	C.	D.	Total.
Total cases ...	22 ...	51 ...	41 ...	47 ...	161
Facies epileptica ...	2 or ...	16 or ...	21 or ...	34 or ...	73 or
seen in ...	9.0% ...	31.3% ...	51.2% ...	72.3% ...	45.3%

Of a total, therefore, of 161 cases 73, or 45.3 per cent., showed the expression of countenance known as the *facies epileptica*. Its presence was noted in those with mental integrity as well as in those showing the several degrees of dementia but its percentage frequency showed a progressive accession as the degrees of dementia increased, until in Class D as many as 72.3 per cent. of the epileptics showed the characteristic expression. It is more frequently seen in male than in female epileptics, for of the 73 cases only 19 were women.

IS THE INTERPAROXYSMAL MENTAL CONDITION IN EPILEPSY AN INTEGRAL PART OF THE DISEASE?

It is generally known, and the observation has been amply corroborated by the foregoing statistics, that both mental integrity and mental impairment may be found amongst epileptics, but the question arises whether the mental condition which characterises the interparoxysmal period in many epileptics forms an integral feature of the disease, or is induced by the character, the duration, and the frequency of the seizures, or by any other peculiarity of the malady. As reference has already been made to the views of the earlier physicians upon this subject and the divergence of opinion which is held upon it, it is only necessary in this place to consider how far the present statistics throw any further light upon the solution of the question.

In the first place, it may be stated that mental failure is not essential to the idea of epilepsy. On the one hand, it is seen that a certain number of epileptics present no obvious mental deficiency, notwithstanding an inherited predisposition to the disease, a duration of the malady for from 20 to 30 years, its onset in early life, the combination of both the major and the minor seizures, and a recurrence of the seizures so frequent that they may be counted by the week. On the other hand, it has been shown that pronounced dementia may exist when there is no known heredity, when the disease is of short duration (under five years), when the age at onset is as late as the fourth decennium, whether the attacks are of the grand or petit mal type, and even when the seizures have been completely arrested.

Secondly, an attempt will be made to show on the basis of the collected cases that the mental condition is not a direct consequence of the seizures, but is an expression of the same nervous constitution which gives rise to the convulsions, but influenced by various coexistent factors, such as hereditary disposition, duration of the disease, age of the person at the onset of the convulsions, and the character and frequency of the paroxysms.

(a) A hereditary disposition to epilepsy and insanity—in other words, a family degenerative neurosis—favours the production of the severer types of dementia and the establishment of the disease as a confirmed malady, as shown in Table III.

(b) The duration of the disease is a potent factor in determining the mental condition, but its influence is incidental to, rather than causative of, the mental decrepitude, for, as is shown in Table IV., a fair percentage of cases of extreme dementia are met when the disease has lasted less than five years, as well as a percentage of cases with mental integrity after the fits have persisted for over 50 years.

(c) Upon the character or type of the seizures depends to a large extent the degree of mental impairment. But

dementia and mental integrity are inversely associated with the severity of the attacks, the major convulsions being as commonly accompanied by mental health as by profound dementia. On the other hand, the minor seizures are more frequently found with mental failure than with mental health (Table VI.). The nature and combination of the attacks therefore provide an indication of the severity of the disease. The petit mal attacks when occurring alone are more frequent than the grand mal under similar conditions, but the combination of the two kinds occasions a frequency and intensity of the seizures, which furnish an indication of the degree and intensity of the malady. But the character of the seizures, though influential, is not solely responsible for the mental condition, for it is found that both types, separately or in combination, are associated with mental integrity as well as with mental deficiency.

(d) The facies epileptica is found in those who show the slightest as well as the more profound degrees of dementia, but there is also a very small percentage of epileptics with normal mental attitude in whom this feature is present. Although its presence is not directly referable either to the degree of mental infirmity or even to any mental deficiency at all, the proportion of cases in which it is observed is in direct relation to the intensity and severity of the mental decrepitude. Hence the facies epileptica is another feature of the degenerative neurosis producing the disease, of which convulsions and mental impairment are further symptoms. The severity of the disease, therefore, is gauged by the combination of the grand and petit mal attacks, by the degree of dementia, and by the occurrence of the facies epileptica.

(e) There is a direct association between the frequency of the seizures and the mental state, for the more frequent the attacks the greater the degree of mental impairment and *vice versa*. If the severity of the disease in any given case is gauged partly by the frequency and partly by the character-combination of the paroxysms then it is found that the severer the disease the greater the tendency towards dementia. For it is a well-recognised clinical fact that attacks which recur daily or weekly are rarely either of the major or minor types alone, but a combination of the two, with the minor variety the more obtrusive. And in this relation attention may be also directed to that class of epileptic in whom the fits are especially in series. These cases indicate a modification of the disease, with periodic exacerbations of extraordinary intensity and in them we find a high percentage of demented. We have also seen that there exist certain cases of epilepsy where the fits have been arrested either spontaneously or by treatment. In these all classes of mental impairment may be met, so that arrest of the seizures does not necessarily imply arrest of the disease.

(f) The age at which the disease commences, which is determined by the onset of the seizures, influences to some extent the subsequent mental condition; in other words, the earlier the onset of the fits the less the probability of an unimpaired mental condition and the greater the chance of the establishment of confirmed epilepsy. The type of cases found in institutions for epileptics shows this more obviously than those which remain outside, no doubt on account of the greater severity of the disease in the former, indicated by the greater frequency of the seizures and by the combination of the major and minor types.

The evidence adduced in this paper tends to support the view that the earlier the onset of the disease, especially under ten years of age, the greater the probability of mental failure, but that the small percentage of cases admitted to the colony over 25 years of age does not permit of any definite statement being made as to what occurs when the disease is late in onset.

SUMMARY AND CONCLUSIONS.

1. A total of 161 cases, which have been under my observation at the Colony for Epileptics, Chalfont St. Peter, has been used for the investigation.

2. The mental features of the interparoxysmal state have been divided for descriptive purposes into four classes, the first containing those epileptics without any obvious mental impairment and the fourth those with the highest grade of dementia.

3. The interparoxysmal mental condition is discussed in its several varieties and degrees, with special reference to the influence of sex, hereditary disposition, age at onset, and character, duration, and frequency of fits.

4. Sex has little influence upon the mental condition, but

it may be stated in general terms that males are numerically more afflicted than females (91 per cent. of the former to 78 per cent. of the latter) but that the highest degree of dementia is somewhat more common in women than in men.

5. A family predisposition to epilepsy and insanity, although not necessarily militating against the retention of normal mental faculties, favours the supervention of some degree of mental impairment. A higher percentage with a hereditary history is found amongst those epileptics who show the profounder degrees of dementia, than amongst those who show merely impairment of memory or a normal mental condition.

6. The duration of the disease influences to some extent the mental condition. Mental impairment is less frequent when the fits have lasted for under five years, just as mental integrity is less commonly seen when attacks have persisted for ten or more years. But mental health and mental deficiency are observed in cases in which the disease has lasted respectively for over 20 years and for less than five years.

7. The age at the onset of the convulsions influences to some extent the subsequent mental condition, for the earlier the onset, especially during infancy and childhood, the less the probability of an unimpaired mental state.

8. The character and combination of the fits have an important relation to the mental condition, the profoundest degrees of dementia being most commonly seen when the major and minor attacks coexist. The petit mal seizures occurring alone are found with the lower grades of mental impairment. When the grand mal occurs alone mental health is as common as mental deficiency.

9. There is a direct association between the frequency of the fits and the mental state—the more frequent the seizures the greater the degree of mental impairment and *vice versa*. Fits recurring in series are accompanied by a high grade of dementia.

10. The term "facies epileptica" is applied to the physiognomy characteristic of the disease in many epileptics. It is found more commonly with the higher grades of dementia but its existence is not limited to such cases, for it is observed in those with only impairment of memory as well as without any mental failure.

11. The view is upheld that the interparoxysmal mental condition seen in most cases of epilepsy is one expression of the neurosis of which the fits constitute another; that the former is therefore not directly dependent upon the seizures and that the frequency and character-combination of the paroxysms in association with the degree of mental failure indicate the severity and intensity of the disease.

12. The following figures show the percentage frequency of the four classes of mental deficiency amongst the 161 cases used for the purposes of this paper: Class A, intellectually normal, 13.6 per cent.; Class B, with impaired memory, 31.6 per cent.; Class C, feeble-minded, 25.4 per cent.; and Class D, demented, 29.1 per cent.

Harley-street, W.

THE CARDIAC DULNESS IN CASES OF CANCER.¹

By W. GORDON, M.D. CANTAB., F.R.C.P. LOND,
PHYSICIAN TO THE ROYAL DEVON AND EXETER HOSPITAL.

I WOULD venture in as few words as possible to draw attention to a physical sign which has, I think, hitherto escaped notice, yet one which, if my observations prove correct, should be found valuable in a considerable number of cases.

Some years ago in the routine examination of several patients with gastric cancer I observed that although no evidence existed of ordinary emphysema the area of cardiac dulness, mapped out in the recumbent position, was either much reduced or actually obliterated. In some of them where the dulness was obliterated the resonant note over the heart was, it is true, slightly higher pitched than over the lung but it was definitely resonant, not dull. The reduction or obliteration of the cardiac dulness was sometimes associated with a rather surprisingly small and soft pulse.

Since my first observations I have often noticed this curious physical sign and some time ago I became so sure

¹ A paper read before the Royal Medical and Chirurgical Society on March 8th, 1904.