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Part I.—Original Articles.

*Seven Hundred Cases of General Paralysis of the
Insane; being an analysis of all the cases which
have occurred in the Glamorgan County Asylum
from 1867 to 1896.* By J. G. SMITH, M.D., Assistant
Medical Officer, Glamorgan County Asylum.

AT the annual meeting of alienists, in Switzerland, in 1888, Wille directed attention to the writings of Felix Plater, who practised at Bâle nearly three centuries before, and in these writings are to be found the first definite descriptions of general paralysis; but it was not till after Willis in 1672, Haslam about 1800, and Bayle twenty years later, had each independently described the disease, that any great interest was awakened in it. Since that time, however, it has furnished a fruitful source of interest and discussion to many physicians, which has not only been abiding, but as the disease began to be better understood, has increased to a wonderful extent.

The large amount of attention which has been bestowed upon most of the prominent features of the disease, as is indicated by the numerous writings on the subject, both in this country and abroad, and the great variation not only in the results, but in the interpretations which have been put upon them by different observers—has led me to believe that an examination of the records of this asylum, bearing on the cases

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of general paralysis, might throw some light on many of the features of the disease, and help—even if only by confirming the conclusions arrived at by other observers—in rendering more definite our knowledge of this now common but intensely interesting malady.

I am, of course, aware, that the records of one county may not indicate accurately the state of affairs to be found in others, but the fact that the district from which these cases are drawn includes the two great seaport towns of Cardiff and Swansea, in addition to a large industrial and agricultural area—attracting as they do such a varied population to the neighbourhood—would seem to justify the belief, that Glamorganshire is peculiarly suited to the purposes of such an investigation.

In order, therefore, to obtain sufficient data from which to review the matter under discussion, I prepared a set of tables—which it does not seem necessary to reproduce here—on which my conclusions are based, and showing particulars of each case as follows :

1. Year of admission.
2. Age at onset.
3. Age at death.
4. Condition as to marriage.
5. Occupation.
6. Assigned cause.
7. Existence or non-existence of hereditary predisposition.
8. Duration in years or months.
9. Occurrence or non-occurrence of congestive seizures, the period at which they appeared, together with a description of the attacks, and whether fatal or not.
10. Prevailing state of mental disorder.
11. Complications—bedsores, retention of urine, hæmatomata, pneumonia, phthisis, &c.
12. Termination.
13. Presence of a spastic or an ataxic condition.
14. Nationality.

The period under consideration is one of thirty years, 1867 to 1896 inclusive, and in some instances I have compared the results obtained by dividing that period into three decades.

*Proportion of G.P.'s to the Total Admissions and their
Distribution as to Sex.*

Males.	Females.	Totals.	
3193	2649	5842	Total admissions.
574	128	702	G.P. „
18 per cent.	4·8 per cent.	12·3 per cent.	Percentage of total admissions.

The percentage of 12 as the total G. P. admission of both sexes is somewhat higher than usual, Mickle giving 7·8 per cent., though Arnaud gives the following :

1882	13·03 per cent.	1885	14·60 per cent.
1883	14·75 „	1886	15·45 „
1884	11·00 „	1887	19·50 „

The sex proportion of four males to one female corresponds with that given by Mickle, and calculated by him from the lunacy blue-books (comprising 54,000 persons). This may, therefore, be taken to fairly represent the condition of affairs, as indeed is done by most observers at the present time, though twenty years ago there seems to have been a great diversity of opinion on this point, Sander placing the proportion at ten and a half males to one female, while others put it even higher.

It is interesting to note that the disproportion between the numbers of the two sexes is less marked at the earlier ages than at the later, as will be seen from the following table :

Age.	Males.	Females.	Proportion.
Under 30	52	15	3·4 to 1.
30—39	273	64	4·2 „
40—49	189	34	5·5 „
50—59	51	14	3·6 „
60 and over	8	1	8 „

Comparing these results with those of other observers on this point, it is found that Doutrebent and Baillarger assert that the sexual disproportion becomes less after the age of forty-five, but the above figures show that this is only true of the ages 50 to 59.

To the occurrence of the menopause has been attributed by the above writers, the increase in the number of female G.P.'s

at the ages 50 to 60, and this seems to obtain confirmation from these figures, for, as is seen below, there is a greater disproportion between the percentages of G.P.'s at the ages 40 to 50 and 50 to 60 in the male than in the female.

Age.	Males.	Females.
40—50	29·7 per cent.	23·4 per cent.
50—60	8·2 „	10·2 „

Comparison of Results obtained by Dividing the same Period into three Decades.

1867—1876.

Males.	Females.	Totals.	
672	573	1245	Total admissions.
116	27	143	G.P. „
17·2 per cent.	4·8 per cent.	11·4 per cent.	G.P. percentage.
3·5 males to 1 female.			

1877—1886.

Males.	Females.	Totals.	
911	737	1648	Total admissions.
136	27	163	G.P. „
15 per cent.	3·6 per cent.	9·8 per cent.	G.P. percentage.
4·1 males to 1 female.			

1887—1896.

Males.	Females.	Totals.	
1610	1339	2949	Total admissions.
322	74	396	G.P. „
20 per cent.	5·5 per cent.	13·4 per cent.	G.P. percentage.
3·6 males to 1 female.			

From the above it would seem that general paralysis has become more frequent during the last thirty years, both in males and females, but that males are chiefly responsible for this increase.

Age relation.—The mean age at onset of all cases of insanity—excluding general paralytics—admitted here during the thirty years, I find to be in males 39 years, and in females 39·2 years, and it has shown a tendency to become greater during that period, for it was only 38·4 years in males and 38·7 years in females, while for both sexes it was 38·5 years during the first decade.

Now, comparing these with the mean ages at onset of all general paralytics admitted during the same period, the results are as follows :

Years.	Males.	Females.	Both sexes.	
1867-76	38·6	38·0	38·0	} Mean age in G.P.'s.
1877-86	38·3	37·3	37·0	
1887-96	38·9	37·0	39·0	
Totals	38·6	37·3	38·0.	

From the above it is seen that the mean age at onset of G.P.'s of both sexes is slightly lower than that of all admissions, excluding G.P.'s, but that, while male G.P.'s are slightly older than the other insane, female G.P.'s are somewhat younger.

It is also seen that male G.P.'s are older at onset than females, and have always been so since 1867, and that while the mean age of the males has shown a tendency to become greater, the mean age of females has become less.

Arnaud states that the mean age is lower than formerly, and Ritti also says that "the mean age of G.P.'s is progressively diminishing since the beginning of the century."

Age frequency.—The statement made by Mickle that general paralysis is found most frequently between the ages of 30 and 55, is borne out by the following table ; at least, as far as regards the ages 30 to 50, for it is here seen that during the three decades the percentage of G.P.'s at these ages is over 30 per cent. of the total admissions at that age in the first period, and that it rises from over 33 per cent. in the second to 45 per cent. in the third, whilst if the age period 30 to 60 be taken the result is still more striking, 58 per cent. being the figure for the third period.

Ages.	Percentage of total admissions.		
	1867-76	1877-86	1887-96
20-30	3·7	4·3	5·4
30-40	20·6	20·4	22·6
40-50	10·8	13·0	22·7
50-60	5·5	10·8	12·7

Now, while the percentage of G.P.'s between 30 and 60 shows such an increase, that of G.P.'s at the earlier ages (20 to 33) also shows an increase, but not nearly to the same extent.

This would seem to support the statement made earlier, that the mean age is higher than formerly.

General paralysis in the young.—In a total of 702 cases only seven were under the age of twenty-five on admission. This corresponds with the returns in the blue books.

The youngest age at which a G.P. was admitted was 19, while there were two at 21.

Of those over 25 but under 30 there were 9·4 per cent. of the total admissions; this is higher than usual, the lunacy blue books giving 8·5 per cent.

General paralysis in the aged.—Of those over 60 there were nine, but only three can be called cases of typical G.P., the other six clearly being cases of ordinary paralysis associated with senile mental changes.

Arnaud saw three cases at 63, 64, and 67 respectively, and concluded that general paralysis tends to become more frequent after 60, but the records here do not support his assertion.

Marriage relation.—The table below shows order of frequency in married, single, and widowed G.P.'s in percentage of all cases admitted.

	Male.	Female.
Married	28·0	5·4
Single	7·3	1·9
Widowed	15·2	4·1

From this it is seen that the order of frequency is—

- | | |
|--------------------|----------------------|
| (1) Married males. | (4) Married females. |
| (2) Widowed „ | (5) Widowed „ |
| (3) Single „ | (6) Single „ |

The married are most frequently affected in both sexes, and the single are least so. The same holds good for the three decades.

1867—1876.

	Males.	Females.	Totals.
Married	27·5	5·6	16·8
Widowed	18·8	4·3	9·0
Single	4·8	2·4	4·0

1877—1886.			
	Males.	Females.	Totals.
Married	23·8	5·2	14·4
Widowed	10·0	3·0	5·5
Single	6·4	0·47	4·4

1887—1896.			
	Males.	Females.	Totals.
Married	32·7	7·2	20·0
Widowed	17·0	5·1	13·4
Single	10·7	3·1	7·7

The above results correspond with those of Mickle.

Types of G.P.'s and their relative frequency.—The great majority of G.P.'s can, on examination, be divided into three great clinical types, according as the state of mental disorder can be described as one of dementia, mania, or melancholia, and these three conditions describe the mental state which prevails throughout the course of the disease in individual cases, that is, apart from the condition of dementia into which all, sooner or later, lapse.

I have therefore endeavoured to divide all the cases under consideration in this way, of course omitting all in which there was not a definite description of the prevailing mental condition.

Percentage of Different Types to Total G.P. Admissions.

Maniacs.	Dements.	Melancholics.
54·2 per cent.	40·0 per cent.	5·8 per cent.

Those of a maniacal type were therefore most numerous, and the melancholics were least so.

The question as to whether any change has taken place of late years in the relative frequency of the three types is answered by the following table.

	Dements.	Maniacs.	Melancholics.
1867—76	17·5 per cent.	13·8 per cent.	1·4 per cent.
1877—86	27·2 „	12·1 „	2·3 „
1887—96	43·2 „	11·3 „	1·24 „

Here it is seen that there has been a large increase in the

percentage of the demented type, and a decrease in the percentage of the maniacal type, both being calculated on the total admissions of the respective types.

The percentage of dements admitted of all classes of insanity has at the same time fallen from 18·2 per cent. (1867–76) to 12 per cent. (1887–96).

The conclusions which one would draw from the foregoing, therefore, are that the bulk of G.P.'s are characterised by a condition of mental exaltation, but that this type is becoming less frequent than formerly, the demented type replacing the maniacal form, and that it is this demented type which is responsible for the increased frequency of the disease.

Arnaud directed attention to the increasing frequency of the demented type (*An. Méd. Psych.*, July, 1888, p. 89) and the above figures would seem to show that the classical type is slowly but surely giving way before a rapidly increasing though not less interesting type, which is characterised by a condition of dementia occurring even at the beginning of the disease.

As to the cause of this increase, it does not seem improbable that the more common tendency nowadays than formerly for persons at that critical time of life when general paralysis is most apt to appear, to indulge in various excesses, but chiefly of drink and tobacco, may be held responsible, in some degree at least, for this remarkable change.

Charpentier, in 1890, stated that "early dementia is the rule in cases given to tobacco excess," and that "this occurs mostly in young subjects" (*An. Méd. Psych.*, Sept., Oct., 1890).

Duration.—The duration of general paralysis has been stated by different authorities to be a period varying from thirteen months (Calmeil, *Paralysie général des Aliénés*) to twenty-three months (Parchappe, *Recherches sur l'encéphale*, 1836, p. 155) in pauper patients.

In a total of 434 completed male cases I find the average duration to be 23·8 month whilst in 101 females it is 24·4 months, or in both sexes in 535 cases 24·0 months.

The male cases are therefore of shorter average duration than the female by 0·6 months, and though this corresponds with the results arrived at by others, the disproportion between the average duration in the two sexes is not so great in this county as in some others. For example, the *West Riding Reports* (vol. v, p. 202) give 20·7 months (male) and 25·9 months

(female), or 21·6 (both sexes); the difference being therefore 5·2 months. On the other hand, at the Devon Asylum (vol. i, p. 138) the male average duration was found to be as low as 15 months, and in females it was 27 months, the difference being no less than 12 months.

An estimation of the average durations in months during each of the three decades gives the following results :

	Male.	Female.
1867-76	25·3	22·2
1877-86	23·4	30·2
1887-96	22·7	23·0

The average duration has, therefore, become somewhat shorter in males and somewhat longer in females. This would seem to receive confirmation from the fact—shown by the table below—that there has been an increased percentage of male cases dying under three years' duration, during the three decades, with a corresponding decrease in the percentage of those dying after more than three years' duration.

	First.	Second.	Third.
Under 1 year	11·2 per cent.	16·9 per cent.	18·13 per cent.
„ 2 years	32·4 „	34·3 „	43·30 „
„ 3 „	19·8 „	22·01 „	25·27 „
„ 4 „	12·9 „	9·5 „	8·7 „
„ 5 „	6·03 „	6·6 „	2·19 „
Over 5 „	7·75 „	4·4 „	3·29 „

Prolonged and short duration.—4·8 per cent. of each sex lasted over five years. Three cases died under four months.

Heredity and duration.—In those in whom hereditary predisposition was said to have existed, the average duration was 24·6 months for males, and 25·5 months for females, or 25·0 for both sexes; whilst in those who had no hereditary taint the duration in males was 23·2 months, in females 24·1 months, and in both sexes 24·0 months.

This, therefore, agrees with Mickle's statement "that hereditary cases with their greater tendency to long remissions are often of prolonged duration." Dr. Lionel (*Nouv. Dict. de Méd. et de Chir. prat.*, 1878, p. 123) held similar views.

Condition as to Marriage in Relation to Duration.

	Male.	Female.
Married	24·5 months	26·6 months
Single	22·6 „	24·7 „
Widowed	18·7 „	22·1 „

Therefore, longest in married females, and shortest in widowed males.

Influence of congestive seizures on duration.—In a total of 319 G.P.'s who had convulsions before or after admission the average duration was 24·4 months, whilst in those admitted during the same period who had no seizures of any kind it was 23·4 months; so that, contrary to the common belief that G.P.'s in whom congestive attacks occur are shorter lived than those who never have them, it is seen that the very opposite is the case. Dr. C. F. Newcombe (*West Riding Reports*, vol. v, p. 198) found the same thing.

Relation of the type to duration.—In the insane generally it is found that cases in which dementia is the form of mental disorder, run a very prolonged and chronic course, as a rule, and it may be for this reason that G.P.'s of the demented type are believed to run a similar course, but in 500 cases the average duration of those belonging to the demented type I find to be exactly the same as that of those belonging to the maniacal form, *i. e.* 24·5 months, whilst in the melancholic type it is 24·6 months.

Relation of Age at Onset to Duration.

Age at onset.	Average duration.
Under 30	26·1 months.
30—39	23·1 „
40—49	22·0 „
50—59	18·0 „

The earlier the disease begins, therefore, the longer it lasts; and as the age at onset increases the duration is correspondingly shortened.

Influence of the cause on duration.—By considering the duration of the cases due to the various causes under the usual subdivisions—moral and physical—it is seen from the table below, that those due to physical causes are of somewhat

shorter duration than those due to the moral, and that the cases which were said to have been caused by drink, are responsible for this shortening.

Assigned causes.	Average duration.
Physical, Drink } " Venereal }	25·1 { 24·3 months 30·5 "
Moral	26·0

Relation of a spastic or an ataxic condition to duration.—In 241 cases in which spastic symptoms were described the average duration was 25·6 months, whilst in 44 cases with ataxic symptoms the average duration was 24·1 months.

Congestive seizures.—Of completed cases 61·5 per cent. male and 55·7 per cent. female had some form of congestive seizure during the progress of the disease, so that men seem to be more liable to them than women. As will be seen from the table below, congestive seizures seem to have been more common in women than in men in former years, but this state of affairs is now reversed.

Percentage of G.P.'s who had Convulsions.

	Males.	Females.
1867-76	46·7 per cent.	58·3 per cent.
1877-86	66·3 "	56·0 "
1887-96	67·4 "	54·3 "

With regard to the statement of Esquirol (*Des Maladies Mentales*, t. ii, p. 264) that G.P.'s had almost invariably convulsions setting in during the closing days, I find that in this county only 24 per cent. terminated in this way.

There seems to be an increasing proportion of men who die in consequence of the onset of convulsions, for there is an increased percentage in the third decade over the first, of these terminating in this way—12 per cent. being the proportion in the first period, and 18 per cent. in the third.

This increase cannot have a relation to the increased mean age during the same period, for the latter is but slight compared with the former.

In 28 per cent. of the male cases, and in 31 per cent. of the females the disease began with a convulsive seizure, so that women seem to begin in this way more frequently than men

whilst in both sexes congestive attacks were more frequent at the beginning of the disease than at the termination.

Influence of the age at onset on the occurrence of seizures.—From the table below it would appear that the age of incidence has a marked influence on the occurrence of convulsions, the latter tending to become less frequent the older the patient is at the onset of the disease.

Percentage of those who had Convulsions at the different Age Periods.

Age.	Percentage.
Under 30	65·3 per cent.
30—39	61·6 ”
40—49	61·0 ”
50—59	55·5 ”

Relation of ataxia and spasticity to the occurrence of congestive attacks.—Spastic cases seem to be more liable to congestive seizures than those of a tabetic nature, for I find that in 241 spastic cases, congestive attacks occurred in 71 per cent., whilst in 44 of an ataxiform nature they occurred in 47·7 per cent.

Relation of congestive seizures to a state of dementia.—The question as to whether dementia—coming on at the beginning of the disease—is due to the occurrence of congestive seizures or not would seem to require an affirmative answer, for I find that of the cases which were said to have begun with epileptiform attacks 75 per cent. were of the demented type, whilst 65 per cent. of those in the exalted class began in this way.

Causation.—Of all the causes given as being responsible for the occurrence of G.P. the physical stand out as being by far the most prominent. Compared with the moral, the physical are in the proportion of over five to one, and drink accounts for more than half the percentage of the total physical causes.

Moral.	Physical.
6 per cent.	32 per cent.

In the insane generally the proportion of physical to moral causes is about five to one.

Now drink as a cause of insanity generally has increased from 23 per cent. in the first period, to 35 per cent. in the third ;

whilst drink as a cause of G.P. has only increased from 19·7 per cent. to 20·8 per cent., so that it does not seem to exert a marked influence in causing G.P.

Hereditary predisposition.—With regard to this question the following tables show the state of affairs.

*Percentages of Admissions with Hereditary Predisposition
who were G.P.'s.*

1867-76	20·3 per cent.
1877-86	10·1 „
1887-96	7·5 „

Percentages of all admissions who had Hereditary Predisposition.

1867-76	8·2 per cent.
1877-86	15·5 „
1887-96	30·8 „

The conclusions to be drawn from the above tables may be several. The percentage shown may merely indicate more careful discrimination now than formerly of the cases in which H.P. was alleged, or they may show that causes other than H.P. are now at work in the production of the disease. This latter supposition would seem to receive confirmation from the fact that H.P. has become more common as a cause of insanity generally, than it used to be, as is seen from the second table, in which are shown the percentages of all persons admitted who had a history of H.P.

Continental physicians in dealing with this question, seem to be able to trace the existence of heredity in a larger percentage of the insane than is the case in this country; Barthomeuf, for example, finding a history of hereditary predisposition in about 15 per cent. of G.P.'s of both sexes.

Occupation.—The following table shows the result of separating all G.P.'s into two great classes:

1. Those who follow a more or less laborious calling—labourers, colliers, and tradesmen generally.
2. Those who use the brain more than the hands—accountants, musicians, chemists, clergymen, &c.

G.P. Percentages of Admissions in each Class.

	First class.	Second class.
1867-76	17·4 per cent.	7·5 per cent.
1877-86	14·4 „	15·6 „
1887-96	12·4 „	37·5 „

From the above it appears that formerly general paralysis was more common among the labouring classes than nowadays, and that it is among the better educated that the majority of its victims is now found.

Complications.—It is interesting to note how few G.P.'s have died of intercurrent disease, 10 per cent. only of those without convulsions dying of other complaints under the average of two years, whilst the great diminution in the number of cases in which bedsores occur is satisfactory from a nursing point of view, as is also the now less frequent appearance of hæmatomata.

Notes on Four Cases of Major Operations on the Insane.

By J. H. SPROAT M.B.Lond., Senior Assistant Medical Officer, Somerset and Bath Asylum, Wells.

G. D—, æt. 69, admitted September 21st, 1896, for the eighth time. He was maniacal on admission, and had remained so for twelve months.

In January, 1898, he commenced to complain of pain on micturition; his urine was strongly alkaline and contained pus. He stated that two months previously he had inserted a piece of vulcanite pipe stem into his urethra. On passing a sound no foreign body was detected in the urethra, but a stone was felt in the bladder.

On February 1st supra-pubic cystotomy was performed, and a stone two inches long and one inch thick was extracted, and the piece of pipe stem was found embedded in it. In a fortnight the abdominal wound was quite healed and micturition normal; he occasionally complained of lumbar pain, but this passed off, and he was discharged well mentally and bodily four months after the operation.