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Part I.—Original Articles.

PSYCHIATRIC ASPECTS OF THE POST-ENCEPHALITIC SYNDROME.

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THE present description is based on a study of 168 men and 107 women (total 275), who have been admitted to the Rampton State Institution diagnosed as post-encephalitic.

TABLE I.—*Of the Two Sexes the Year of Onset is given as Follows.*

	Males.	Females.
1908	1	—
1910	1	—
1911	—	1
1912	—	1
1915	1	—
1916	—	1
1917	4	—
1918	11	2
1919	7	5
1920	14	6
1921	15	5
1922	7	5
1923	17	16
1924	22	11
1925	16	8
1926	7	4
1927	4	1
1928	2	3
1929	1	1
1930	1	1
1931	—	3
1932	—	1
1933	1	1
	132	76
Years not recorded	36	31
	168	107

Thus of 208 cases in which the year of onset is given, 90 occurred in the years 1923, 1924 and 1925.

It is sometimes stated that encephalitis lethargica is a disease that has now ceased to occur in its acute form, in spite of the fact that odd cases are still being notified under the Infectious Diseases regulations, but whether this is so or not, it remains true that trauma, the infectious fevers and vaccinia are still capable of giving rise to a condition that may resemble the post-encephalitic syndrome very closely.

At the same time, one must admit that none of the present series of cases has given a history of encephalitis subsequent to 1933, though, as will be seen from the table that follows, they were still being admitted to this Institution up to the end of 1944, and I know that their admission continues.

TABLE II.—*Year of Admission to Rampton State Institution.*

	Males.	Females.
1923	1	—
1924	1	—
1925	2	—
1926	8	1
1927	5	2
1928	9	5
1929	15	4
1930	25	18
1931	12	3
1932	12	7
1933	8	8
1934	13	3
1935	10	7
1936	9	10
1937	6	8
1938	9	6
1939	9	7
1940	5	6
1941	7	1
1942	1	3
1943	1	2
1944	—	6
	168	107

The reason for this lag between onset of disease and admission to Rampton is chiefly due to the following facts: (*a*) Personality change is not always quick to show itself; (*b*) many of the cases undergo terms of imprisonment or committal to approved schools, reformatories, industrial schools or Borstal institutions before being certified; (*c*) some of these eventually find their way to mental hospitals and mental deficiency institutions; and (*d*) it is only when they prove unmanageable at other institutions that they are sent to Rampton.

These facts are indicated in the following tables:

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TABLE III.—*Showing Interval between Onset of Encephalitis Lethargica and Certification under the M.D. Acts.*

			Males.	Females.
Less than	1 year		—	1
More than	1 year	less than 2 years	5	2
,,	2 ,,	,, 3 ,,	4	5
,,	3 ,,	,, 4 ,,	7	2
,,	4 ,,	,, 5 ,,	15	7
,,	5 ,,	,, 6 ,,	11	7
,,	6 ,,	,, 7 ,,	8	6
,,	7 ,,	,, 8 ,,	15	9
,,	8 ,,	,, 9 ,,	11	9
,,	9 ,,	,, 10 ,,	13	6
,,	10 ,,	,, 11 ,,	8	5
,,	11 ,,	,, 12 ,,	8	3
,,	12 ,,	,, 13 ,,	6	2
,,	13 ,,	,, 14 ,,	7	1
,,	14 ,,	,, 15 ,,	4	6
,,	15 ,,	,, 16 ,,	3	1
,,	16 ,,	,, 17 ,,	2	—
,,	17 ,,	,, 18 ,,	1	—
,,	18 ,,	,, 19 ,,	3	1
,,	19 ,,	,, 20 ,,	—	1
,,	20 ,,	,, 21 ,,	—	1
,,	21 ,,	,, 22 ,,	1	—
,,	25 ,,	,, 26 ,,	—	1
			132	76

Information of a similar kind is provided by tables showing the year of certification for the total group: thus we find the year of certification under the original reception order as follows:

TABLE IV.

	Males.	Females.
1920	2	—
1921	1	1
1922	3	1
1923	1	2
1924	1	3
1925	2	3
1926	8	6
1927	13	3
1928	21	12
1929	18	7
1930	24	11
1931	13	8
1932	17	12
1933	3	2
1934	9	8
1935	14	6
1936	6	7
1937	1	6
1938	5	3
1939	3	4
1940	2	—
1941	1	1
1942	—	—
1943	—	1
	168	107

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which shows that whereas the peak years for the onset of encephalitis lethargica were 1923 and 1924, the peak years for certification were the five years 1928–1932 inclusive, during which time 93 of the 168 males and 50 of the 107 female cases were certified.

The wide variety of channels through which these patients eventually find their way to Rampton is indicated by the following table:

TABLE V.—*Showing the Kinds of Previous Institutions (including Domiciliary) from which the Post-encephalitics have been Eventually Transferred (not counting Transfer to Similar Institutions in Individual Cases).*

	Males.	Females.
From Mental hospitals	23	21
,, Certified institutions	87	65
,, Public assistance institutions	32	25
,, Prisons	23	4
,, Police stations	3	—
,, Industrial schools	11	3
,, Reformatories	7	—
,, Borstal institutions	8	—
,, Broadmoor Criminal Lunatic Asylum	1	—
,, Residential schools	2	1
,, Approved schools	3	1
,, ,, homes	1	1
,, Remand homes	2	—
,, Philanthropic social schools	1	—
,, Orphanages: Barnardo's	1	—
National Children's Home	1	—
,, Guardianship	6	3
,, Own homes	6	3
,, Winchmore Hill special hospital for post-encephalitics (L.C.C.)	6	2
,, Places of safety	4	2
,, Occupation centres (under the Central Council for Mental Welfare)	1	1
,, Special schools for M.D. children	1	3

From which it is seen that the main avenues for admission of the present series to Rampton are, in order of importance: (1) Certified institutions for mental defectives, (2) public assistance institutions, (3) mental hospitals, and (4) prisons. The small number of cases direct from home is also evident.

If we compare Table IV with the year of admission to Rampton (Table II), we see that from 1928 to 1932, 73 males and only 37 females were admitted, whereas in the 5-year period 1936–1940 the figures were 38 males and 37 females, which suggests (though no more is claimed for it) that the arrest of mental development is more protracted in females than in males, though it may also indicate that the foibles of the fair sex are tolerated much more readily than those of the male sex. This is borne out by Table V, which indicates that whereas 59 males passed through such "criminal" channels as prisons, Borstal institutions, industrial and approved schools, reformatories, etc., the corresponding number for females is only 10.

The physical effects of encephalitis are much greater in the males than in the females, but it also seems to be true—

(1) That the ratio of psychopathic cases of encephalitis in males and females

is roughly 3 : 2 (as compared with the average admission rate of approximately 9 males to 8 females).

(2) That the social consequences are more serious in the males than in the females.

The relationship to mental deficiency is indicated in Table VI.

TABLE VI.—*To Show the Degree of Mental Defect in Post-encephalitis.*

	Idiot grade. I.Q. 0–25%.	Imbecile grade. 25–50%.	Feeble-minded. 50–75%.	75–100%.	More than 100%.	Total.
Males	2	24	130	11	2	169
Females	0	18	82	5	2	107

Further information may be gained by studying the case material in terms of the relationship of mental deficiency to the age of the onset of encephalitis. Thus Table VII :

TABLE VII.

Males:				
Age of onset before 5	Idiots, 2 Imbeciles, 13 Feeble-minded, 13 I.Q. more than 75, 1	29	132	
Age of onset from 5–10	Idiots, 0 Imbeciles, 3 Feeble-minded, 39 I.Q. more than 75, 5	47		
Age of onset from 10–15	Idiots, 0 Imbeciles, 1 Feeble-minded, 34 I.Q. 75–100, 1 ,, more than 100, 1	37		
Age of onset after 15	Idiots, 0 Imbeciles, 2 Feeble-minded, 14 I.Q. 75–100, 2 ,, more than 100, 1	19		
Females :				
Age of onset before 5	Idiots, 0 Imbeciles, 7 Feeble-minded, 12 I.Q. more than 75, 0	19	76	
Age of onset from 5–10	Idiots, 0 Imbeciles, 2 Feeble-minded, 31 I.Q. 75–100, 1	34		
Age of onset from 10–15	Feeble-minded, 13 I.Q. 75–100, 2 ,, more than 100, 2	17		
Age of onset after 15	Feebleminded, 6	6		

It will be remembered that the M.D. Acts of 1927 modified the previous Act of 1913, to make possible the certification of post-encephalitics as mental defectives, by defining mental defect as a state of arrested mental development occurring before the age of 18 years. That mental development is retarded there can be little doubt, in spite of the occurrence of exceptional cases showing more than average intelligence. It is also evident that the earlier the disease

makes its appearance, the more likely and profoundly is intellectual impairment to arise. Thus the proportion of the lowest grades is more marked in the "before 5" groups than subsequently, even though the incidence of psychopathic encephalitis is greater in the 5–10 groups than in the others, though it must be remembered that our series does not in general take account of encephalitis occurring after the age of 18. If, however, we review the age of onset for each year, it will be seen that a small group have actually developed encephalitis after the age of 18, though certification under the M.D. Acts was possible by virtue of evidence of mental defect existing prior to the occurrence of encephalitis.

TABLE VIII.—*Showing the Age of Onset of Encephalitis.*

	0–1.	1–2.	2–3	3–4.	4–5.	5–6.	6–7.	7–8.	8–9.	9–10.
Males .	11	4	4	3	3	9	8	14	6	14
Females .	3	0	2	7	7	5	7	6	6	8

	10–11.	11–12.	12–13.	13–14.	14–15.	15–16.	16–17.	17–18.	18	Total.
Males .	5	4	12	9	8	3	8	5	2	132
Females .	5	1	4	2	8	1	3	0	1	76

It is quite evident from our series that mental defectives are no more immune to encephalitis than any other section of the community.

Thus 14 males and 7 females had been notified as showing abnormal tendencies, with or without mental defect, before the onset of encephalitis. These were made up of the following cases:

Males.

(1) Noted as defective from an early age, but having had an attack of encephalitis at 11.

(2) Noted as defective from an early age, but having an attack of encephalitis at 22.

(3) Noted as defective from an early age but with no history of an attack of acute encephalitis, but diagnosed as a post-encephalitic at 23.

(4) Ditto, but diagnosed as a post-encephalitic at 30.

(5) Noted as backward, not walking till 5, but contracting encephalitis at 10.

(6) Noted as defective at 2, but contracting "meningitis" at 7. This man is a very definite post-encephalitic with obvious Parkinsonism.

(7) Noted as "vicious and wandering" at 4, and having encephalitis at 5.

(8) Diagnosed as defective at 10, having a severe head injury at 14, and at 31 noted as being a definite Parkinsonian post-encephalitic.

(9) Had an attack of encephalitis at 13, but noted as defective from an early age.

(10) Had an attack of encephalitis at 17, but noted as defective previously.

(11) Had encephalitis at 13, but was impulsive and destructive previously.

(12) Noted as having criminal tendencies at 7, and encephalitis at 13.

(13) Noted as dull and backward previous to encephalitis at 12.

(14) Noted as having an uncontrollable temper in 1914 and having encephalitis in 1923.

Females.

(1) Had encephalitis at 6, but was noted as defective previously.

(2) Was difficult from birth, but was diagnosed as a post-encephalitic at 19.

(3) Was said to be defective from injury at birth, but on admission at Rampton at 20 was suffering from severe Parkinsonism.

(4) Was noted as defective from an early age, having had convulsions at 3 months, which were attributed to difficult delivery at birth, and being diagnosed as a post-encephalitic at 20, with multiple tics and involuntary movements.

(5) Was at a special school for defectives, and contracted encephalitis at 13.

(6) Was noted as defective from birth, and excluded from school, but on admission at 8 was diagnosed as a post-encephalitic.

(7) Was noted as defective at 7, and had encephalitis at 8.

Examination of the case material shows:

(1) Encephalitis certainly produces severe retardation of intellectual development.

(2) Mental defectiveness in itself may be a precursor of encephalitis, and though it might be hazardous to suggest any causal relationship between the two states, yet the possibility might be borne in mind.

(3) Encephalitis may not only produce arrest of mental development, but also predisposes to marked mental deterioration in certain cases. Cases which illustrate this are the following:

(*a*) One male whose mental age was assessed at 11 years in 1928, but who seven years later was estimated at less than 8.

(*b*) A patient whose I.Q. fell from 82 to 70 in three years.

(*c*) A male patient whose mental age was assessed at 13 in 1940, which had fallen to 11 years 3 months three years later.

(*d*) A male patient whose mental age at 20, three years after an attack of encephalitis, was assessed at 12½, seventeen years later was assessed at 10 years 3 months.

(*e*) A male patient whose mental age by Terman tests was assessed at 16, ten years after an attack of encephalitis, but who twelve years later was assessed at 10 years and 5 months.

(4) In spite of severe mental retardation in certain cases, some recuperation is possible, though this probably applies only to a minority of cases. The following cases exemplify this:

(*a*) The case of a man who was diagnosed as an imbecile in 1937 following encephalitis, but whose mental age in 1943 was assessed at 14, and who was regarded by the other patients as someone rather superior in intelligence as compared with the rest. He was also sufficiently recovered to allow of his transfer to a certified institution.

(*b*) The case of a man who had encephalitis at 11, but who had sufficiently recovered to allow him to graduate with an Arts degree.

(*c*) The case of a man who had encephalitis at 13, was only able to reach standard 4 at school, and by tests was assessed at a mental age of less than 10, but who wrote a play called "The Pride of Rome," which was sufficiently complete to have been capable of production on the stage.

(*d*) The case of a boy of 10 who had encephalitis at 5, and was assessed by tests as having a mental age of 6, though a year later this was assessed at 8 years 11 months, and by the Porteous maze test at 10.

(*e*) The case of a girl who had encephalitis at 5, with a later history of fire-raising

and stealing, whose mental age was assessed by Binet tests as 10½ at 28, and who later recovered so that her mental age at 31 was assessed at 14 years 2 months.

(*f*) The case of a girl who developed encephalitis at 18, whose mental age five years after after a spell of very marked immorality was assessed at 12 years, was found on re-testing at 28 to be 17 years 2 months, with an I.Q. of 114.

(*g*) The case of a girl who had encephalitis at 3, was diagnosed as an imbecile at 10, reported as having a mental age of 9 at 27, and a mental age of 12 years 3 months at 30, with an I.Q. of 82 per cent. by Terman-Merrill tests.

It is advisable to remember the wide variations liable to occur in testing by different workers, though the grading and direction given with the tests is standardized as much as possible. It is only fair to point out, however, that in the present series different workers have assessed the mental ages at different periods, but only figures have been quoted which confirmed the clinical impression of improvement or deterioration, and for the most part at any rate they represent substantial alterations in either an adverse or favourable direction.

In view of what has just been said, it will be realized that the scope of assessment depends upon five important factors :

(1) The level of intelligence attained before the onset of encephalitis.

(2) Related closely to this is the age at which the encephalitis occurred.

(3) The element of psychopathy considerably alters the form of score, with marked scattering in some cases; thus in one case with complete success up to 9, complete failure did not occur till the tests for Superior Adult 1, though the final mental age was only 11 years 7 months ; in another case failure began at the tests for 9 with partial successes up to Superior Adult 1, giving a mental age of 12 years 3 months. Failures in performance tests and memory defects, especially for recollecting details of facts and repetition of numbers, are also found.

(4) In addition to this more or less specific effect of psychopathy there is also the deeper underlying factor of retardation from depression with its accompanying slowing of all intellectual processes. The law of reversed effort also operates, for the post-encephalitic does not like feeling beaten, and tries hard, but usually in vain, to come out well in the tests. In the more manic phases, there may be a certain facility in the tests which is offset by distractibility and irrelevant interruptions. Others will argue with great vigour that the form of the tests is wrong, and spend considerable time, if allowed, to indicate how they should be presented. In the Otis group tests the most constant item of failure is in the similarities test, though the other tests show fairly wide variation in failures. In general the post-encephalitic rather enjoys mental tests, and his keenness is probably better brought out in group tests than in the individual ones. He feels that he is competing with his equals and the possibility of success fascinates. This, I think, is a partial explanation of his great interest in conundrums, which appear to provide him with considerable interest and amusement.

(5) The degree of restoration obtained when the active process of deterioration has abated.

The Goodenough test, which is based on the ability to draw the figure of a man, is frequently recommended for assessing the mental age of defectiveness. As a test it has a very restricted sphere of usefulness, if for no other reason than

that it depends upon drawing ability, which is quite a special manifestation of intelligence. In comparison with more representative tests it also tends to give a much lower assessment in general. Thus in 100 post-encephalitics the results were as follows:

Mental age						on points:						
less than	3	..	6				less than	3	..	6
3 and	,,	4	..	3			3 and	,,	5	..	2
4 ,,	,,	5	..	3			5 ,,	,,	7	..	3
5 ,,	,,	6	..	17			7 ,,	,,	9	..	7
6 ,,	,,	7	..	26			9 ,,	,,	11	..	9
7 ,,	,,	8	..	21			11 ,,	,,	13	..	12
8 ,,	,,	9	..	17			13 ,,	,,	15	..	14
9 ,,	,,	10	..	3			15 ,,	,,	17	..	12
10 ,,	,,	11	..	4			17 ,,	,,	19	..	10
				—			19 ,,	,,	21	..	10
Total	..	..	100				21 ,,	,,	23	..	8
							23 ,,	,,	25	..	—
							25 ,,	,,	27	..	2
							27 ,,	,,	29	..	4
							29	..	..	..	1
											—
							Total	..	..	..	100

Head measurements for 100 male encephalitics, as compared with general male hospital population, give the following figures:

(a) *Longitudinal* (head length).

Post-encephalitic:		Average population.	
17·8–18 cm. . .	6	1 . .	17–17·5 c.m.
18·1–18·5 cm. .	15	4 . .	17·6–18 cm.
18·6–19 cm. . .	41	22 . .	18·1–18·5 cm.
19·1–19·5 cm. .	23	25 . .	18·6–19 cm.
19·6–20 cm. . .	11	32 . .	19·1–19·5 cm.
20.1–20·5 cm. .	3	12 . .	19·6–20 cm.
20·6–21 cm. . .	0	3 . .	20·1–20·5 cm.
21·1–21·5 cm. .	0	1 . .	20·6–21 cm.
21·6–22 cm. . .	1	0 . .	21·1–21·5 cm.
	100	0 . .	21·6–22 cm.
		100	

An average of 19·03 cm. as compared with 19·004 cm. for the general population:

(b) *Transverse* (head breadth).

Post encephalitic:		Average population:	
13·5–13·6 cm. .	0	4 . .	13·5–13·6 cm.
13·7–13·8 cm. .	1	4 . .	13·7–13·8 cm.
13·9–14 cm. . .	2	7 . .	13·9–14 cm.
14·1–14·2 cm. .	5	14 . .	14·1–14·2 cm.
14·3–14·4 cm. .	4	15 . .	14·3–14·4 cm.
14·5–14·6 cm. .	16	14 . .	14·5–14·6 cm.
14·7–14·8 cm. .	9	12 . .	14·7–14·8 cm.
14·9–15 cm. . .	17	14 . .	14·9–15 cm.
15·1–15·2 cm. .	5	6 . .	15·1–15·2 cm.
15·3–15·4 cm. .	10	5 . .	15·3–15·4 cm.
15·5–15·6 cm. .	21	3 . .	15·5–15·6 cm.
15·7–15·8 cm. .	2	1 . .	15·7–15·8 cm.
15·9–16 cm. . .	4	1 . .	15·9–16 cm.
16·1–16·2 cm. .	2	0 . .	16·1–16·2 cm.
16·3–16·4 cm. .	1	0 . .	16·3–16·4 cm.
16·5–16·6 cm. .	0	0 . .	16·5–16·6 cm.
16·7–16·8 cm. .	1	0 . .	16·7–16·8 cm.
	100	100	

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An average of 15·07 for the post-encephalitic group as against an average of 14·66 for the general hospital male population:

(c) *Cephalic index.* This is obtained by dividing the head breadth by head length and multiplying by 100. The figures for this are:

Post-encephalitics:		General hospital male population:
69·1–70	1	1 69·1–70
70·1–71	1	2 70·1–71
71·1–72	0	3 71·1–72
72·1–73	2	5 72·1–73
73·1–74	0	10 73·1–74
74·1–75	7	12 74·1–75
75·1–76	9	13 75·1–76
76·1–77	6	10 76·1–77
77·1–78	9	13 77·1–78
78·1–79	15	8 78·1–79
79·1–80	18	10 79·1–80
80·1–81	6	5 80·1–81
81·1–82	10	6 81·1–82
82·1–83	3	2 82·1–83
83·1–84	4	0 83·1–84
84·1–85	1	0 84·1–85
85·1–86	3	0 85·1–86
86·1–87	2	0 86·1–87
87.1–88	1	0 87·1–88
88·1–89	2	0 88·1–89
	100	100

An average of 79·23 per cent. for the post-encephalitic group as compared with 76·1 per cent. for the general hospital male population group:

(d) *Cephalic circumference.*—The comparative figures for these are:

Post-encephalitics:		General hospital population:
51·1–52 cm.	0	4
52·1–53 cm.	3	5
53·1–54 cm.	14	19
54·1–55 cm.	19	23
55·1–56 cm.	33	29
56·1–57 cm.	21	13
57·1–58 cm.	3	6
58·1–59 cm.	4	1
59·1–60 cm.	2	0
60·1–61 cm.	0	0
61·1–62 cm.	1	0
	100	100

An average of 55·4 cm. (21·88 in.) for the post-encephalitic group as compared with 54·04 cm. for the general hospital male population group.

In general it appears that head length tends to be shorter, as judged by the main concentration of the group in the ranges less than 19 cm., as compared with that for the controls in the 19·1–19·5 cm. range.

There was one post-encephalitic with hydrocephalus in the 21·6–22 cm. range, which brought up the average considerably.

Along with this relative diminution of head length, there was in the post-encephalitic group a much more uneven distribution curve for head breadth with a definite tendency to concentration in the higher ranges, with the maxi-

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mum number of 21 in the 15·5–15·6 cm. range, and for the general hospital population to be concentrated in the less than 15 cm. range.

This difference is confirmed by the figures for the cephalic index, which shows a greater concentration in the higher ranges than for the lower, in contrast to the figures for the general population. The figures for the cephalic circumference show a slightly greater concentration in the higher ranges with a higher average in the post-encephalitic group. The only suggestions I have to offer for this comparatively greater breadth of head, cephalic index and circumference is that some slight degree of hydrocephalus may be more common than we recognize, and also that at post-mortem some of the cases have hypertrophy of the skull, especially of the parietal bones. It is, of course, possible that the decrease in head length could be explained as a consequence of arrested cerebral development. The fact that the distribution curve shows some irregularity for cephalic breadth and index certainly points either to a lack of uniformity in cause, or to multiple factors.

Insanity and the Post-encephalitic State.

Doctors who have worked in both mental hospitals and mental deficiency institutions have said that the post-encephalitics of both institutions present little difference in their characteristics, but there is no doubt that there are individual differences between different cases, so that some present more psychotic symptoms than others. The Rampton series represents an intermediate group in which there are indications of mental defectiveness along with violent and dangerous propensities which may or may not have a markedly psychotic colouring, though in them all there are indications that they have passed from a state of mere backwardness to a state of psychopathy. The psychopathic effects can be dealt with separately, but our immediate purpose is to review their symptoms from the more strictly psychotic aspect.

The data of insanity may be reduced to the following main categories:

(1) Confusion.

(2) Emotional imbalance, either by hypofunction (schizoid) or by hyperfunction (hyperaesthesia), which may be fitful, too pessimistic (depression) or too optimistic (mania).

(3) Hallucination.

(4) Delusion.

(5) Dementia.

If we apply these to the data of the present cases we see that their relative distribution is as follows:

	Males.	Females.
(1) Confusion	60 (35·71%)	42 (39·25%)
(2) Emotional imbalance:		
(*a*) Schizoid	75 (44·64%)	24 (22·42%)
(*b*) Cycloid	89 (52·98%)	38 (35·51%)
(*c*) Epileptoid	32 (19·05%)	10 (9·35%)
(*d*) Manic	60 (35·71%)	31 (28·97%)
(*e*) Depressive	67 (39·88%)	31 (28·97%)
(3) Hallucination	8 (4·76%)	8 (7·48%)
(4) Delusion	42 (25·00%)	13 (12·15%)
(5) Dementia	34 (20·24%)	13 (12·15%)

The phases of confusion appear to be related to insecurity feelings connected with some breakdown in the parent-child relationship. This is exemplified by the following correlations of 57 males and 33 females showing confusional episodes in the suggested connotation. Lack of information explains the brevity of the notes offered here, and also why I am unable to say anything about the remaining 3 males and 9 females.

1. No mother	Wandered away frequently.
2. Brought up by grandparents, both over 70. Father often out of work	Used to hide himself away. Made 16 efforts at absconding.
3. Mother very unstable, health very poor. Father unemployed. Parents unable to control the child. Mother died in 1942	Went away from home for long periods. Memory poor. Threatened suicide on hearing of mother's death.
4. Brought up in poor cottage. Father earned 36s. a week; one of 4 children	Confusion. Indecent exposure to females. Silent and stuporose.
5. Youngest of 12	Wanders. Hid in a ship. Absconded 4 times in one year. Arrested for travelling with no ticket. Stole a cycle on 3 different occasions.
6. Parents of poor mentality. 14 people shared 3 bedrooms in a dirty house. Grandparents lived with them. Mother married one week before patient born	Wanders. Enters and damages property.
7. Parents had no control of the patient	Stayed out all night. Absconded many times. Got out of a window 30 ft. high. Attacks of confusion. Had 15 situations in 2 years.
8. Mother defective. Father alcoholic and immoral	Attacks of confusion. Two attempts at absconding. Used to hide behind the bushes for purposes of masturbation. Sleeps excessively.
9. Mother a hopeless nervous invalid. Father a rag and bone labourer. Patient one of 6 children alive. Lived in a slum with 2 bedrooms	Periodic attacks about once a month with violence, followed by exhaustion. Often ran away from home. Absconded.
10. Father was an M.D. brought up at a C.I.	Wanders at night. No concentration. Dull and vacant.
11. Father on compensation. Mother not strong. Poor home. 2 bedrooms for parents and 5 children	Poor concentration. Truant from school. Wanders on buses.
12. Father neurasthenic. Father and mother and 5 children share 2 bedrooms	Wanders. Tries to escape from home and school.
13. Spoilt by mother, who was mentally dull and nervous. Jealous of twin sisters. Overcrowded house	Boards trains. Absconds. Roof climber. Truant. Noctambulist.
14. Brought up by stepmother . .	No concentration. Lies about anywhere. Dull and apathetic.
15. Says he has no home and no relatives	Stole 2 cycles. Tramped the country. Confused.
16. Father was alcoholic and syphilitic. Mother in bad health	Absconded 15 times. Roof climber and hid in the roof.
17. Parents separated and alcoholic. Father neglectful. Mother's whereabouts unknown	Convictions for wandering. Truant.
18. Father on the dole. Lived in poor locality. One of 5 children	Can't concentrate. Memory defective. Absconded frequently. Convicted for being in a house for unlawful purpose and stealing.

19. Brought up in London slum . .	Convictions for begging, vagrancy and stealing. Had many different employments. Convulsive seizures.
20. Father out of work for 2 years. Brought up in a poor home	Convicted for vagrancy and sexual assault. Stole a cycle. Had many different employments. Wanders.
21. Mother died in fatal accident . .	Frequently absconded.
22. Father dead. Brought up in London slum	Wanders. Dull and disoriented.
23. Mother an invalid and nearly blind .	Vicious and wandering from the age of 4. Developed encephalitis at 5.
24. Father away at sea in the Navy. Mother very anxious	Restless, inattentive, wanders. Gets out of windows at night. Absconds.
25. Both parents dead. Brought up by sister	Absconded. Runs away. Tramps and sleeps out.
26. Illegitimate. Mother later deserted her husband and went to Canada. Brought up by grandmother and an aunt. Later went to Canada but was sent back home	Absconded 25 times, vagrant. "Neglected and without visible means of support." Ran off with ponies, pigs, chickens, scooters and cycles. Fugue-like states. No recollection of what he has done when he absconds. Falls asleep standing up. Very sleepy periods.
27. Father killed in last war. Brought up by stepfather. Illegitimate	Wanders into houses. Holds cars up. Poor concentration. Stuporose attacks.
28. Born in Canada. An only child. Brought up by stepfather. Mother very nervous	Dull. Lethargic. Absconder. Very sleepy in daytime. Kisses older men. Before the court for being "beyond control."
29. Father in a mental hospital . .	Wanders. Stole a cycle. Beggar. Absconder.
30. Father a casual labourer . .	Absconder. Hid in coal bunker and slept there. Somnolence in daytime. Awake at night.
31. Illegitimate. Stepfather man of queer, violent temper. Mother subnormal. Brought up by grandmother	Sleeps in the daytime. Awake at night. Can't concentrate. Tries to climb fences.
32. Father on night-work . . .	Wandered on enclosed premises. Used to have fainting attacks.
33. Father a man of violent temper; epileptic history	Charged with wandering with no visible means of support. Cataplectic attacks. Says he lives a cotton-wool existence and that he sees life as through a thick veil.
34. Mother died when he was 2. Brought up in a poor home . . .	Can't concentrate. Epileptoid attacks. Restless in the night. Sleepy in the daytime. Confusional attacks.
35. Brought up by stepfather, who was often out of work	Left home for a few weeks without saying where he was going. Tried to abscond. Vaso-vagal attacks.
36. Mother dead	Absconder. Restless. Wanderer. Hides himself. Fainting attacks.
37. Father a widower. Brought up in a poor home	Wanderer. Tried to sleep in bed with clothes on. Absconded 3 times. Stole a motor cycle.
38. Father reduced in circumstances. Was a twin—but the other one died	Stole cycles. Truant. Wandered from home. Sullen and liable to fits of drowsiness and temper. Dull and heavy. 14 situations in 6 months.
39. Brought up in a poor locality. Sister at a C.I. Father dead. Mother's whereabouts unknown	Wanders. Truant. Absconds.

40. Father often out of work. Brought up by grandmother	Absconded 8 times. Ran away from home—wandered on the railway line, and into rivers. Stole a cycle. Climber.
41. Comes from a poor home; lacking in control	Charged with "being beyond control." Wanders. Absconded in his shirt. Epileptic.
42. Mother very difficult woman, who made trouble with neighbours. Working-class family	Acute confusional attack with delirium. Disordered sleep with excitement at night. Beggar. Absconder.
43. Mother deserted father, who lived with another woman, and was out of work. Home conditions poor. Two other children out of control and at special schools	Convicted for wandering. Restless. Absconder.
44. Mother dead	Disorientation for time and place. Drops off to sleep when interviewed.
45. Brought up in a poor locality, and in a very overcrowded house	Wanders aimlessly. Cataplectic. Confusional attacks.
46. Father died of cancer; had been prosecuted for poaching and shop-lifting. Mother was feeble-minded	Stole a cycle. Truant. Absconded. Wandered. Rode through the Severn tunnel on the buffer of a petrol truck. Vacant expression. Slept at school.
47. Brought up by grandmother . .	Wandered into houses, etc. Restless. Tried to abscond.
48. Parents of low mentality. Mother a terror to the village	Slept out at night. Absconds.
49. Mother dead	Vacant expression. Falls asleep in the daytime. Wanders. Absconded 6 times. Beggar. Hides in the bushes.
50. Father a casual labourer. Brought up in a London slum	Wandered. Tried to abscond.
51. Father died of tubercle . . .	Attacks of confusion. Epileptic and fainting attacks. Absconded 5 times. Stole a cycle.
52. Mother alcoholic and separated from father	Attacks of fainting; unconsciousness lasts 5 minutes. Very heavy sleeper, Stole a cycle 5 times. Truant from school. Absconder. Sullen and moody.
53. 8th of 9 children. Father on pension, suffering from shell-shock and malaria	Attacks of vacancy, wandering and absconding. Stole 2 cars. Was found starving in a hut that he had built from stolen property. Broke into a shop at night.
54. Has a mother, whom he has twice tried to strangle, and also a step-father	Always truanting. Absconder. History of epilepsy.
55. Mother died when he was 10. Brought up by grandparents and an uncle and an aunt in an overcrowded house in a slum area	Is inattentive, restless. Stayed out late at night. Aimless.
56. Mother dead; was one of 9 children. Father died when he was 22	Wanders. Moves about at night. Restless.
57. Mother died in a mental hospital .	Wanderer. Frequent absconder. Hides himself.

Other factors which appear to be important, though not specifically mentioned above, are the number of occasions in which the stealing of vehicles is an important episode in the wandering state, and also the number of occasions where sexual assaults, rape, indecent exposure and homosexual adventures appear to be the *dénouement* of the wandering phase. In many cases there is a history

of exposure to mother or sisters, or of other instances of a show of affection which has been misplaced.

Females.

1.	Mother a widow. Father killed in the war. One of 7 children. Youngest 2 illegitimate by different fathers. Two bedrooms for whole family	Attacks of confusion. Tried to run away.
2.	Father in Bermuda; a soldier in India in 1925. Was in India from 4–11. Mother tubercular	"Found neglected." Absconded from service while on licence. Tried to run away from institutions. Said to be epileptic as a child. Had an illegitimate child.
3.	Brought up in a poor home. One of 8 children; only 2 bedrooms. Father out of work. Both parents show stigmata	Ran away whenever possible.
4.	Mother dead	Wanders aimlessly.
5.	Parents divorced. Was born in Canada; father very cruel. Has an illegitimate sister	Sudden attacks of violence, then goes vacant. Ran in front of traffic to stop it. Walks in her sleep.
6.	Mother a widow, with a large family. Brother in a home	Confusional attacks. Cannot concentrate. Somnolent in the daytime. Attacks of *petit mal*.
7.	Ill-treatment to mother in pregnancy by father	Absconder. Excessive somnolence.
8.	Mother ill in pregnancy. Brought up by stepmother	Ran away with no shoes on.
9.	Illegitimate. Brought up by stepfather	Wandered on the railway line. Lay down in the road. Entered cars and tried to start them. Shut herself up in a bread van and rode for 8 miles. Somnolent in the daytime.
10.	Father cruel and alcoholic . .	Absconder. Restless.
11.	An orphan. No home . . .	Wanderer. Absconder. Attacks of fainting.
12.	Parents unknown. No home. Brought up at a foundling school	Attacks of stupor. Restless. Roof climber. Cannot concentrate.
13.	Mother of low mentality . .	Dull at intervals. Mind wanders.
14.	Mother a widow and alcoholic. Youngest of 9 children	Ran away to London from Newcastle. Attacks in which she falls to the ground limp and helpless. Attacks of drowsiness.
15.	Both parents dead. Youngest of 5 .	Convicted for wandering abroad. Came from Glasgow, but found in London. Had an illegitimate child at 17. Attacks of drowsiness.
16.	Lived with 3 grandparents. Brought up by stepfather	Restless. Easily distracted. Enters other people's houses and cars and refuses to leave. Kissed and scratched her brother. Wandered for miles.
17.	Father out of work. Mother suffering from pre-senile dementia. House badly kept	Lacks concentration. Wanders, following street organs or music. Attacks of fainting and stupor.
18.	Father nervous after the last war .	No memory for recent events. Restless at night. Wanders. Sleeps all day.
19.	Father suffered from shell-shock. Alcoholic. Parents divorced	Restless. Absconder. Beggar. Immoral from 15.
20.	Father charged with drunkenness. Youngest of 5 alive	Restless. Cannot concentrate. Ran away from school.

21. Father dead. Brought up in Liverpool slum	Goes from home without clothes. Accosts men. Confusional attacks.
22. Father deserted mother . . .	Runs away from home. Romances and detached from reality.
23. Illegitimate. Stepfather out of work. Brought up by grandmother	Wanders. Behaves indecently to boys.
24. Mother immoral. Has an illegitimate sister	Screams at night. Wanders irresponsibly. Runs after men and asks for money. Climbed fire escape.
25. Father suffering from shell-shock and neurasthenia. Grandmother lives with family. Poor home	Restless. Runs aimlessly on the road.
26. Father very nervous. Brought up in poor home	Attacks of confusion and dissociation with amnesia. Walks around the room and undresses herself. Inversions of sleep rhythm. Caresses and bites. Tried to abscond. Stole a cycle.
27. Brought up in a one-roomed house. Mother separated from father	Inattentive, restless, confused.
28. Father alcoholic and out of work. Mother had 10 children and one miscarriage	Wanders off and sleeps out with sailors. Truant.
29. Mother epileptic. Had many convictions against her. Abusive and bad example	Unable to concentrate. Absconded many times. Dissociation. Had one illegitimate pregnancy. Father unknown.
30. Illegitimate	Forgetful.
31. Mother died when 2. Father dead. Brought up by stepmother	Attention wanders. One illegitimate child. Attacks of somnolence in daytime. Absconder.
32. Brought up in a slum. Illegitimate. Has a stepfather	Wandered away from home. Absconder. Frequent employments. Out late at night with men. Had an illegitimate child.
33. Mother mentally unbalanced. A widow	Slow, lethargic. Somnolent in daytime. Absconder. Opens windows to get out. Confusional attacks. Hides herself.

In the other cases there is no information available, but it appears very evident that the patient's own sense of insecurity is related to the insecurity of his own family life. In this connection the ambivalent reactions of love and hate make their appearance, showing themselves where caressing and tenderness suddenly give place to biting and other forms of violence.

The association of confusional attacks with phases of wandering is also worth noting.

"*Whoever introverts libido—that is to say, whoever takes it away from a real object without putting into its place a real compensation, is overtaken by the inevitable results of introversion.* The libido, which is turned inward into the subject, awakens again from among the sleeping remembrances one which contains the path upon which the libido once had come to the real object. At the very first and in foremost position it was father and mother who were the objects of the childish love" (Jung, *Psychology of the Unconscious*, p. 53).

This statement from Jung appears to me to be the inverse of what obtains in many of the post-encephalitics, and in its present form has little or no

application to them, but if objectively there is a breakdown in the parent-child relationship from the parent's side, libido becomes misdirected, and eventually extraverted to an abnormal degree, so that the lack of security may find some sort of compensation in the external world, which takes the form of a number of possible alternatives. These are initially confusion, wandering of mind, loss of the power of concentration, abstraction, memory failure, but passing over into fugue-like states, wandering, vagrancy, truancy, running away from home, absconding, inversion of the sleep-walking rhythm, noctambulism or somnambulism and emotional imbalance which may either be schizoid in form or cycloid with epileptoid, manic (or hypomanic) and depressive forms.

The post-encephalitic suffers from an inability to relate his libidinous trends to a suitable external object, and as a result he suffers from a lack of emotional balance which may be schizoid, or cycloid in form, with the resulting possibilities of epileptoid, manic or depressive phases.

The use of these terms calls for a little further description by way of definition, for the usual Kretschmerian classification is hardly applicable to the type of case that we are here considering. The majority of them can, however, be safely described as "affectively lame," and numbers of them exhibit psychaesthetic disproportion which, according to Kretschmer, is typical of the schizoid temperament.

The underlying paradox of psychiatric classification is abundantly illustrated by the cyclothymic phases of the catatonic (Gjessing syndrome) and the intense introversion (schizoid) of the depressed person. Nor are we any better served by such simple divisions as introvert and extravert. The reactions are more complicated than these simple divisions suggest, and it is rather as though we observe a certain patient pass through a number of emotional evolutions, and say that this reaction is schizoid and that one cycloid. For our present purpose we have studied the series of cases with the following definitions in mind:

(1) By "schizoid" we include such traits as autism, negativism, aloofness, detachment, manneristic conduct, solitariness, resistiveness (usually with impulsive phases), apathy and inanity; we also include such phases as those in which there is a breakdown of the thought processes resulting in word-salad, echolalia and verbigeration.

In a few there are states analogous to those found in catatonia, but many of these are included for the present purpose in the epileptoid group, while hallucinatory and delusional forms are dealt with subsequently and separately. Confusional states have already been discussed.

(2) By "cycloid" we refer typically to states in which periodicity is a marked feature. These are sometimes marked predominantly by manic phases or by depressive ones, while in others fitfulness is a well-marked characteristic in which epileptoid reactions are common.

These include such different forms of periodic behaviour as caressing and biting, moodiness, fits of violence and rage, alternation of laughing with crying, elation and depression, alternation of stealing with homosexuality, outbursts of insane rage followed by exhaustion and prostration,

attacks of violence followed by laughter, periodic attacks of ocular crises alternating with epileptoid attacks, spurts of energy followed by listlessness, sulky periods alternating with aggressiveness, striking bouts followed by depression, sleepiness giving place to impulsiveness, drowsiness followed by fits of temper, or depression alternating with fits of laughing.

Sometimes the attacks recur two or three times a week and last for an hour; in other cases the manic phase lasts a comparatively short time, but is followed by a depressive or exhausted phase, which may last for several hours. In another case periodic attacks recurred in which the patient would be homicidal for twelve hours, while in another bouts of weeping recurred two or three times a day.

Frank hallucinatory phases were found in 11 males and 8 females, one of the males having hallucinations of taste and of smell, and a female having hallucinations of sight and hearing.

	Males.	Females.
Auditory	7	4
Visual	1	5
Touch	2	0
Taste	1	0
Smell	1	0

Delusional systems were not completely formed, but represented underlying tendencies rather than frank manifestations. They can be summarized as follows:

	Males.	Females.
False accusations of ill-treatment	18	5
Persecution	11	4
Hypochondria	7	1
Poisoning	5	0
Reference	3	0
Grandeur	3	0
Death (nihilistic)	2	1
Fantasy	1	3
Love	0	1

The criteria for assessing the degree of dementia present some difficulty, for the legal requirements of certification lay down that the arrest of development following encephalitis should have been initiated before the age of 18 years. We are, therefore, spared the necessity of differentiating between mental defectiveness due to encephalitis and that from other causes, though in passing we may say that, as in all psychiatric causation, etiology is usually multiple rather than simple.

For our present purpose, however, we have tried to assess the incidence of dementia, and for this consideration the following factors have been selected as the more important:

(*a*) Such complete physical deterioration as precludes the patient from any healthy form of occupation. This is probably the most important single factor making for dementia in the present group of cases.

(*b*) Such complete mental deterioration as is manifested by prolonged

loss of control of rectum or bladder, complete withdrawal from reality, and reduction to animal levels. Such cases may be characterized by great ferocity and require seclusion for very long periods.

The Psychopathic Effects of the Post-encephalitic State.

These include a wide variety of different forms of behaviour disorders along with other changes of an abnormal kind.

In the idiot grade (2 males) there is inability to wash, dress and feed themselves, and speech is reduced to inarticulate animal noises, though the patients are frequently noisy, destructive, and faulty in habits.

Sometimes they scream continuously, and they have impulsive outbursts when they attack other people by biting, kicking, scratching and striking. Sometimes they spit, and in their excitement may suddenly jump out of the window, or run madly around the compound; then they throw stones and dirt, and get hold of objects, such as sticks, in order to express their aggressive outbursts. One of the patients was addicted to masturbation, using his legs for the purpose.

The imbecile grade consists of 24 males and 18 females. Although the post-encephalitic may have been of more than average intelligence before the onset of encephalitis, in course of time he may deteriorate to the imbecile level, but in general this grade differs from the picture in higher grades in that he does not usually perpetrate acts of violence or other anti-social conduct which might lead him to the police court, although there are two in the series who were convicted, one of breaking into a canteen and stealing, the other of stealing a cycle. Petty pilfering without conviction is frequently noted.

It has to be remembered, however, that anti-social conduct is more easily overlooked if it is recognized that the patient is so low grade as to be obviously irresponsible for his acts; thus one boy proved a nuisance by begging for coppers, and one girl boarded trams without having the money for her fare.

The chief characteristics of the group are illiteracy, with some impairment of speech, either in the sphere of very much reduced vocabulary or lisping, stuttering, stammering, palilalia, copralalia, echolalia and verbigeration. In other cases speech is reduced to a mutter, with greater or lesser degrees of coherence. Although their habits are slightly more organized than those of the idiot grade, this does not always conduce to cleanliness, for there are a number of cases of which it is reported that they voluntarily and deliberately empty rectum and bladder in the recreation hall, or in their rooms, especially if they are thwarted. It appears as though they use their additional mental equipment for purposes of revenge or self-gratification in ways that are not possible for those of the idiot grade. Thus one patient developed a prolapse of the rectum by putting his fist down his throat to induce vomiting; in the straining which this produced he partially inhibited the vomiting reflex, increasing the intra-abdominal pressure, and must have derived some sexual gratification for this, as he obtained a promise from an unsuspecting medical officer to replace the prolapse with his finger.

This is analogous to cases which carry out rectal masturbation, of which

there are three examples in the series. There are two cases among the females in which regurgitation of food was a feature; one of these would consume the vomitus so induced, and another actually used to practise this disgusting habit with another patient, who would take in the contents of the stomach from lips to lips. Induction of vomiting is a further degree of the same process also found in some of these patients. One patient sucked his gums and spat blood; others exhibit mildly hypochondriacal states of mind. Other patients would soil themselves deliberately, smear themselves, or throw their faeces out through the window. Urine drinking is also recorded. Masturbation, mutual masturbation, indecent exposure, and various forms of homo-sexuality, such as sodomy and fellatio, are also found. In one case it is recorded that he bit the penis of another patient, and on another occasion allowed a higher grade patient to tie a piece of string around his penis.

Swallowing foreign bodies, eating garbage and berries is a feature of some of these cases. Other perversions of appetite include voracious eating, though the subjects are very thin in spite of the large amounts of food they consume.

Various degrees of self-mutilation occur from rubbing the skin with a blanket, picking sores and sustaining cuts through smashing windows, to actual suicidal attempts associated with depression. In the present series these are comprised chiefly of self-strangulation, either manually or with ties or pieces of cloth, and attempts at drowning. One male patient attempted suicide by putting his head down the lavatory. One female patient, however, went to the extreme of attempting suicide by putting the bed foot on her neck.

Other indications of disregard of the instincts of self-preservation are to be found in the ways in which these patients will run madly out into the road without regard to oncoming traffic. Some throw themselves out of windows or on to the ground, while others exhibit an extreme degree of masochism, so that they will ask others to inflict injury on them. In a few cases there is a history of setting fire to objects, burning books recklessly, while one patient fired himself from a lamp. Another patient caused his relatives concern because he turned on the gas and water taps, and ran out into the street, where he stripped himself. Other reckless acts include the case of a boy who rode through the Severn Tunnel on the buffer of a petrol waggon. Climbing windows, roof-climbing (one girl made seven attempts), head banging, wandering into the river, sleep walking and avulsion of toe nails are all recorded features of this group.

Absconding is a well known feature of institutional life, but it has seemed to me that different grades occur corresponding roughly with the level of intelligence of the person concerned. In this particular group it is a fairly frequent phenomenon—15 times in one particular case—but is usually aimless, and appears to be part of the picture of impulsive recklessness so characteristic of the group; thus one girl would run out of the house without shoes on. Truancy and wandering are of a similar nature. A few of these patients like to hide themselves or objects.

A fairly wide variety of violent attacks are also recorded by the usual means of kicking, striking and biting, whilst others use knives, chairs, tables, axes and missiles of various kinds, such as jars, coal, stones, plant pots, crockery,

cutlery, food, water, tea, chambers (with or without contents), blocks of wood and buckets. Some of these patients exhibit their violent outbursts on visiting day, when their relatives come to see them; others have been objects of great concern to both relatives and neighbours—for example, the male patient who pushed his sister into a pond and attacked his relatives with a knife; while a few of them have violently entered into premises for the purpose of theft. A common predisposition to this sort of violent behaviour is the liability to periodic outbursts of violent temper associated with great rage and feats of wild energy. One male patient had a predilection for striking doctors, but also struck nine patients one day and twelve the next! 60 violent episodes were recorded in another case in three years, and one girl was reported to have pulled the hair of 30 different girls. Some of them exhibit a kind of cyclothymia, in which their outbursts are followed by periods of docility and penitence. Some of them even have enough insight to know that they are being possessed by these recurring attacks, in which they are helpless, and will ask to be restrained and to be prevented from striking out. Others appear to have predilections for such peculiarly vulnerable places as the eye. In one case it is recorded that there was blindness in a father and grandfather, and that the patient himself had a congenital cataract, and he was disposed to try to poke out other people's eyes as a sort of protest against fate.

A certain ambivalence of conduct is recorded in a few cases where moods of tenderness and caressing will suddenly give place to one or other of these violent sequels. It will be easily understood that these violent propensities also render the subjects liable to be assaulted in turn. The post-encephalitic is peculiarly susceptible to alternating bouts of restlessness, perhaps with banging, screaming, shouting, and whistling, followed by listlessness, apathy, lethargy, and prostration. In these phases he will lie on the ground, almost as if he were in a state of coma; and quite frequently a patient who has exhibited Parkinsonian rigidity and tremor, in these phases will appear placid, inert and toneless. Grabbing, snatching and clutching represent other instances of the sort of spasmodic behaviour so typical of many of these patients. Generally speaking the more frank psychotic manifestations only occur in the higher grades, but solitariness, some degree of hallucinations and mildly persecuted attitudes are to be found. One patient exhibited the rather grandiose delusion that he had shot a lion and eaten it for dinner, while another used to pick up imaginary objects from the floor. Mannerisms, repetitive movements, such as ceaseless rocking, form a link with the tics so frequently found in the schizophrenic. Others exhibit gestures, grimaces and mimicry.

Many of the traits that have been outlined may be attributed to mischievous propensities which may prove to be very annoying to the community. Thus one girl in her wandering phases would enter houses and cars and would refuse to leave when so requested.

Another girl took away a painter's ladder and threw the paint into a neighbouring field. A male patient proved to be very difficult to manage because he would get on the floor when asked to go, and insisted on wrapping himself around a table leg.

The remainder of these patients comprise 130 males and 82 females in the

feeble-minded group, with an intelligence quotient of between 50 per cent. and 75 per cent. They conform fairly closely to Henderson's classification of the psychopathic state with his categorization into the following groups:

Group 1: Predominantly aggressive.

(*a*) Those who attempt to injure themselves, including cases of suicide.

(*b*) Those who attempt to injure others, including cases of murder and assault.

(*c*) The alcoholic and drug addict.

(*d*) The epileptoid.

(*e*) The sex-variants.

Group 2: Predominantly passive or inadequate, with cycloid and schizoid sub-groups.

Group 3: Predominantly creative, of the genius type, with inability to adapt themselves to their particular group, with Lawrence of Arabia and Joan of Arc as examples.

Even this classification, however, is open to a number of objections from the point of view of the present series of cases; thus; like other attempts at classification, it assumes that a given group can be neatly portioned out into sub-groups that do not for the most part overlap, whereas in actual fact there is the most wide assortment of cases in which conformity to the peculiarities of one sub-group is the exception rather than the rule. Furthermore, the classification suggests a broad delimitation between active and passive groups, whereas the present series as a whole shows features corresponding to both aggressive and passive reactions which usually co-exist, though at different times, in the same patient. The third group postulated represents a very unimportant category numerically, and though it suggests possibilities for development towards a particular socially useful end, it must be admitted that in general this fate is very exceptional.

Applying Henderson's particular classification to this feeble-minded group we have 64 (49·2 per cent.) males and 42 (51·8 per cent.) females who have attempted to injure themselves, and 45 (34·6 per cent.) males and 30 (37 per cent.) females who have been classed as suicidal, either on account of actual attempts or serious threats, of whom three males and one female were successful.

125 males (96·1 per cent.) and 78 females (96·3 per cent.) exhibited violent tendencies towards other people, while 50 males (38·5 per cent.) and 33 females (40·8 per cent.) exhibited destructive propensities to property, and 36 males (27·7 per cent.) and 39 females (48·1 per cent.) orgies of smashing windows.

Alcoholism does not appear to present any problem to the present group of post-encephalitics, partly because of the fact that many of them are certified before they are able to develop tendencies to addiction, and partly too because the patient's anti-social proclivities preclude them from the temptation to become convivial drinkers. One remarkable fact, however, is their tolerance to atropine, and there can be no doubt as to their capacity for assimilating this drug, which in course of time becomes a real addiction. Whereas the usual pharmacopoeial dose is ½ mgm. three times daily, with gradually increasing tolerance, they can take up to 16 mgm. without much apparent discomfort, and though the drug has a markedly beneficial effect in some cases,

withdrawal is usually followed by so much deterioration that treatment by resumption is almost inevitable. Males appear to have much greater tolerance than females, and consequently are much more liable to become addicted. Theoretically, these patients who are highly tolerant to atropine should be classifiable as vagotonics, and although they appear to correspond more with the sympatheticotonic type in their strongly developed aggressive instincts (fight), the following selection of recorded features indicate signs of increased vagal and parasympathetic preponderance:

Contracted pupils; sialorrhoea; generalized hyperidrosis, lachrymation; respiratory dysrhythmias; obesity; lethargy; sexual hyperactivity (sacral plexus).

The probability is that the post-encephalitic is not merely suffering from a heightened activity of the vagal parasympathetic centres, but from an involvement of the diencephalic centres, in which there may be a hyposympathetico-tonia due to fatigue from over-expression of his aggressive propensities.

The epileptoid manifestations of the post-encephalitic state are so varied, and yet so different in many ways from idiopathic epilepsy, that some explanation of the use of the term is necessary. Henderson has drawn attention to the fact that there may be such a condition as the "epileptic character," even though the individual has never had an actual fit in the normal motor sense, and suggests the term "epileptoid" to cover these manifestations of the psychopathic state.

On the other hand, Kinnier Wilson (*Neurology*, pp. 126 *et seq.*) expresses a warning against including under the heading of epileptic phenomena many of the features recorded in the description of cases which have been attributed to epidemic encephalitis, and it is true that many of his contentions have substantial clinical backing. But allowing for this, it does appear that many of the post-encephalitics exhibit periodical attacks which, however they may differ from true epilepsy, have certain similar features, and for want of a better term can be described as "epileptoid." Our main purpose for the moment is to establish facts, and rather to defer the interpretation of them. An illustrative case will show both the difficulties of interpretation and the nature of the facts:

W. B— up to the age of 9 years was not notably different from other children except that he was backward at his lessons.

When 9 he had a fall. From the age of 10 he frequently had epileptic fits in which he lost consciousness for 6 to 8 hours and bit his tongue. Fits came on at varying intervals: sometimes he would go for 3 weeks without one; at other times he would have 3 to 4 weekly, usually at night, but after an attack for some days he was very irritable and spiteful to his smaller brothers and sisters. He would throw objects at them, including a chopper at his sister, and the father, who was a bricklayer's labourer, was afraid to leave home in case the boy injured his mother. He would strike his little brothers, take them by the throat, and if stopped by the mother, would attack her. He was disobedient, obscene, uncontrollable by the mother, and destructive to his toys. He needed supervision in dressing and washing.

He was considered at 13 to be incapable of receiving benefit from a special school, and never got higher than the 3rd standard at the Council school.

At Rampton, on admission in 1928, 3 years later, his mental age was assessed at about 8 years, and at first it was thought that he was simulating epileptic attacks, because they came on after being annoyed. These were characterized by general choreiform tremors and twitchings affecting trunk, arms and legs, but not the face, along with upward turning of the eyes.

For a while after admission he exhibited periods of muscular twitching which might last for seven days. On other occasions they might begin in the night and last 10 hours. They were separate from the epileptic convulsions, which would produce a loss of consciousness lasting for 3 minutes and were associated with incontinence. The staff could usually foretell when a convulsive attack was supervening by the fact that the eyes would become dull in appearance and turn up slightly, though not to the extent that they would in an oculo-gyric attack. At times a period of twitching would be followed by an epileptic convulsion which would terminate the twitching period. Less often fits would be followed by twitching. At the time of his first admission to hospital the nursing staff were quite confident that there was a large volitional element in the twitching episodes, and stated that they abated when he thought he was not being observed. The incidence of these attacks, both of twitchings and convulsions, continued to vary, but on the whole the latter attacks were rather less frequent than the former (ratio 2 : 3). The twitching attacks often followed violent outbursts of aggression, and were associated with periods of muteness and helplessness when it might be considered that he was unconscious, though after the attack was over he could usually tell what had been happening in the ward. In some of these attacks he was incontinent, but when the regular nursing staff were present who knew his peculiarities by giving him his urinal at regular intervals this could be avoided.

Examined during one of these episodes the following features were noted:

1. Prolonged oculo-gyric attack with external and upward deviation more marked in the right eye than the left.
2. Myoclonic twitchings affecting arms, legs and trunk, particularly on the left side.
3. Marked rigidity of the muscles around shoulders, elbows, wrists, knees and ankles on both sides.
4. Complete loss of abdominal reflexes, with no marked changes in deep reflexes.
5. Attitude of flexion at wrists, extension at metacarpo-phalangeal joints and flexion at the phalangeal joints.

Examined three days later when the attack was over, there was diminution of motor power in the arms and legs, and he was unable to roll from the supine to the prone position unaided. There was some wasting of the muscles of the arms, and to some extent of the forearms, along with spastic rigidity of the muscles of the forearm, shoulders, hips and knees on both sides. The extensor tendons of hands and feet stood out prominently. When he was asked to stand he showed the characteristic attitude of astasia-abasia, and on walking had a high stepping gait with some scissors action of the adductors. His reflexes showed absence of abdominal reflexes apart from a slight response in the right lower quadrant, absent cremasteric reflexes and a double extensor plantar response. All deep reflexes were exaggerated, and there was double ankle clonus. Hands and arms showed intention tremor, and there was gross ataxia to heel and knee tests. There was also ataxia on standing with the feet together with a tendency to fall to the left, and ordinarily he had to stand with feet wide apart to maintain his balance. There was no gross loss of sensation except after a fit, when sensation to cotton-wool was diminished as far as the middle of the thighs. Joint sense, sense of position, deep and superficial muscle sense did not appear to be grossly disturbed, but he was not a good subject. Variability in the reflexes has previously been noted, but repeated examination confirmed this, deep reflexes sometimes being grossly exaggerated, at other times appearing within normal limits, ankle clonus appearing and disappearing, and plantar responses being both flexor and extensor on different days and at other times being equivocal. The oculo-gyric attacks were not always accompanied by twitching, sometimes being associated with opisthotonic spasms. At other times they were accompanied by twitchings of the sterno-mastoids. In spite of the general impression that the attacks could be voluntarily induced, but not voluntarily terminated, occasions were reported when the attack was cut short by peremptory command or when the attention was fixed on some particular object.

At times he was noted to show phases of euphoria when he felt confident he was going to get better, and in these moods, attacks of twitching were likely to occur with oculo-gyric spasms.

Frequent loss of weight, as much as a stone in a month, were reported, which may have been due to stuporose periods when he refused food. In general he has maintained a fairly normal weight with a tendency to obesity (weight 10 stones). Sometimes polydipsia was noted, and occasionally pyuria, haematuria and phosphaturia.

Pyrexia of unknown origin has been noted with a temperature of 105·4° with a pulse-rate of 144. On another occasion it was recorded as being 95° with pulse-rate of 56. Obstinate constipation with scybala was a pronounced feature. Periods of confusion, excitement and wandering have also been recorded.

Sir Arthur Hall, who saw him in 1941, reported:

"This low-grade epileptic seems to have been subject to attacks in which there are movements of an athetotic kind. They begin with some deviation of the eyes and retraction of the head. They last for several hours, during which it is thought that he can bring one on, but that once it has developed he cannot stop it.

"I am inclined to think they may be oculo-gyric attacks of a rather exceptional kind, the result of an old epidemic encephalitis. My reasons for suspecting this are:

"1. They have been recurring at intervals for many years.

"2. They last for several hours, during which, though not unconscious, he is practically helpless.

"3. Although it used to be thought in the earlier days that he could bring one on voluntarily and did so at times, it is quite agreed that once an attack has developed, he cannot stop it. (This is quite characteristic of the oculo-gyric attack.)

"4. When an attack is over he is quite himself again, and even after all these years there is no evidence of any permanent after-effect of the attacks.

"5. They are said to begin with some turning of the eyes and retraction of the head.

"The one point in which this man's attack differs from other oculo-gyric attacks is in the extension of the body muscles generally, in the form of movements of an athetotic kind. Such a thing is, however, by no means unknown. I have seen one or two cases in which there has been widespread torsion spasms with similar athetotic movements during an eye attack.

"Against this view it may be said that the man does not show any other physical sign of encephalitis. This, however, is no criterion that he has not had it. I have more than one post-encephalitic attending my clinic at the Royal Hospital who, except for oculo-gyric attacks, appears to be quite well. One of them is actually a bus conductor on regular duty."

As to the etiology of the oculo-gyric attacks, Jelliffe has suggested that these are not pathognomonic of the post-encephalitic state, but that they may occur in association with paralysis agitans, epilepsy, cerebral syphilis, cerebral tumour, disseminated sclerosis, cerebral abscess, hemiplegia, and general paralysis.

A frequently occurring syndrome in the present series of cases is a previous history of convulsive attacks as some part of the illness, followed by periods of stupor in which the patient would be inert, either on the ground or in bed for several hours, to be followed by outbursts of violence when the patient would suddenly throw himself out of bed, roll around the room and bang his head or sometimes the whole body against the wall or the door. Attacks of howling, screaming and weeping sometimes alternating with helpless fits of laughter are recorded features. Enuresis is a common phenomenon, and frequently is ascribed to pure wilfulness. In a few cases faecal incontinence is associated with it. Many of these patients fall when they are walking, sometimes hurting themselves badly, and lie inert until they are picked up. In other cases periodic outbursts of fury occur in which the patient is homicidal,

and before admission some of them have been diagnosed as epileptic furor. Some of these violent patients will break out into fits of weeping and howling after a violent outburst because they are conscious of these powerful impulses which they are quite incapable of controlling. One patient had a predilection for striking members of the staff, and had enough insight to keep out of the way in case an attack should come on. Another patient would ask the staff to hold him so that he would not do any harm. Other cases, in their violent outbursts, would throw all sorts of objects within reach, often doing great damage in the process. Some cases have been diagnosed as suffering from "petit mal," in which the chief features are attacks of fainting, vertigo, pallor, pseudo-anginous pains, or with cyanosis and respiratory dysrhythmias. Attacks resembling narcolepsy are a fairly common feature of the post-encephalitic state, and occur long after the acute illness has subsided. The patients fall asleep at all sorts of odd times. Frequently they give an impression of trying to dodge work, but they will fall asleep at meal-times, when they are being interviewed, or in the recreation room, when they are playing games. Inversion of the sleep rhythm is a fairly frequent phenomenon in the acute attack, which is sometimes in evidence in the chronic state. Night terror, noctambulism, and periodic attacks of vacancy and wandering are also found. As many of the post-encephalitics try to abscond from institutions it would be quite natural to assume that this was attributable to their disregard of the laws and regulations of their detention, but as so many of them have also exhibited propensities for truancy, aimless wandering and vagrancy, it rather suggests that many of these episodes are of the nature of fugues. Thus Stengel (*J. Ment. Sci.*, **89**, 237) has reported a case of post-encephalitic Parkinsonism with typical fugues with the impulse to wander, and atypical fugues during oculo-gyric crises in which impulses to run away were associated with depression, ocular crises and violent attempts.

The oculo-gyric crises exhibit the same sort of fitfulness in incidence as cases of idiopathic epilepsy. As to the frequency of the attacks, Jelliffe reports from the literature 3 cases in 300 post-encephalitics (Bing), 5 in about the same number (Wimmer), 20 in 100 (Stern).

In the present series of 275 cases they have occurred in 33 patients, and seem to be more frequent in males than in females (26 : 7).

In many cases there occur frequent intervals of crises in a day with periods of remission; at other times there may be complete freedom from attacks; in others there is regular recurrence every two or three days, sometimes lasting a few minutes, sometimes a few hours. Some are induced by efforts of concentration, while other patients state that reading a book or some other occupation which helps to fix their attention will abort an attack. In one patient, going to the cinema will bring on an attack, whereas in another, anticipation of going is sufficient. Many patients are accused of being able to precipitate an attack when they are asked to do some routine task, though it is probable that when an attack has developed, time and relaxation alone will bring it to an end—the amount of time depending on the individual patient. In some cases, however, the attacks may be shortened by the use of hyoscine.

The volitional factor presents quite an interesting problem, for many of

these patients are recorded as having shammed fits, feigned faints, brought on ocular crises to serve their own ends, fallen into attacks of semi-stupor or deliberately urinated, and yet the specific nature of their action makes them fit into a syndrome which is so common to the total group. Thus, of 168 males, 32 and of 107 females 10 gave a history of convulsive seizures, only 5 males and 2 females of whom were regarded as genuine epileptics; 22 males and 17 females gave a history of narcoleptic attacks; 26 males and 7 females gave a history of oculo-gyric crises; 18 males and 9 females gave a history of fainting and *petit mal* attacks; 23 males and 2 females gave a history of repeated falls; 13 males and 11 females were recorded as subject to outbursts of throwing themselves on to the ground or through windows; 18 males and 12 females exhibited attacks of stupor; 17 males and 18 females are noted as being liable to enuresis, while 19 males and 18 females were liable to outbursts of howling.

The sex-variants of the feeble-minded group differ from those of the lower grades, in that they show much greater tendency to homosexuality and all its variations and also to heterosexuality. As in all the propensities we have so far discussed, the differences between the grades consist rather in the fact that the range of perversion is much more restricted in the lower grades; the higher grades exhibit all the tendencies that the lower grades show, along with greater variety, though sometimes a higher grade patient may become infatuated with a lower grade patient and induce him to a homosexual partnership involving mutual masturbation, sodomy and fellatio.

Of the total group of 168 males only 14 cases are not recorded to have shown sexual perversions, if one include urinary and faecal incontinence. Of the remaining 154 the variants are divided as follows:

	Urinary and faecal incontinence	31
Homosexual	Masturbation	58
	Mutual masturbation	22
	Masturbation of others (apparently not mutual)	5
	Sodomy	51
	Fellatio	41
Heterosexual	Offences against little girls	24
	Indecent exposure	15
	Sexual assaults with rape	24
	Other forms of sexual misconduct	2

In addition to this group there are 11 cases of rectal masturbation, some with an associated history of prolapsed piles, prolapsed anus, prolapsed rectum and melaena. In 5 cases the sexual perversions were associated with violence, as a result of which the fraenum was torn. In other cases the penis was injured by being bitten during fellatio, and in other instances match-stems were inserted into the urethra, and pins and ligatures of string were inserted or applied.

Of the total group, 35 (of 168) have had convictions against them for sexual offences; these include:

Sexual attacks on women and female children.
,, ,, men and boys.
Indecent exposure (in one case 40 complaints in 4 years).
Indecent behaviour.
Bestiality and buggery.
Rape.
Carnal knowledge.

Of the 107 females 27 presented no indications of instinctual deviations. The different perversions are represented by the following figures:

Urinary and faecal incontinence	26
Masturbation	43
Rectal masturbation	4
Homosexuality	16
Sexual attacks on others	8
Indecent exposure	12
History of illegitimate children	13
Heterosexuality, including prostitution, gross immorality and false accusations against men	26

It is interesting to note that only one of these patients had a conviction against her for sexual offences.

For the sake of completeness it remains to say something more about the 13 males and 7 females with an I.Q. of more than 75 per cent., though we have already noted their "epileptoid" and sex activities in relation to the whole series of cases. These higher grades exhibit the same gamut of violent tendencies as those found in the 50–75 per cent. group. They can descend to the same depths of degradation as the lowest grades, but show more variation in their propensities. They can also explain themselves more fluently. Thus one girl described how "something rose up" in her, making her feel that something would burst unless she fought. She seemed to pass her life alternating between terror and apathy. She, like other highest grade post-encephalitics, had a remarkable capacity for "agitating" the other patients. They can be most importunate, and never seem able to take "No" for an answer. She swallowed hair clips, safety pins, shoe buttons, leaves, and on one occasion, eight pebbles and five berries! She would throw herself violently out of bed and down stone steps, tore her hair, scratched herself, produced an otorrhoea by picking at her ear, went on hunger strike, and tried to commit suicide by tying up her neck. She was paranoid in outlook, and at times had auditory hallucinations. But for all this, she tried to give the impression of being rather studious, and professed a great interest in the poets, and read geology. She came to Rampton from a mental hospital and improved sufficiently to be allowed to go home, but the last I heard of her was that she was in a mental hospital again. With lower grades one does not expect to see much steady improvement, but in the patients with higher I.Qs. one is continually hoping that by the addition of insight these unfortunates may be able to reach sufficient stability to warrant consideration for life in the outside world again.

Henderson's gloomy prognosis for psychopaths in general is very much confirmed by the relapses of the post-encephalitic. Thus I have known a post-encephalitic, who had been convicted for indecent exposure, abscond from the institution and get his discharge from the M.D. act by lapse of his certificate,

only to find himself re-certified because he committed the same offence again. This perseveration shows itself in many ways: thus one post-encephalitic thief has an extraordinary penchant for bicycles; another one is a confirmed thief, and when he is detected in his crime he vows he will steal no more, but on search it is discovered that in his pockets are two handkerchiefs and a knife belonging to other patients! This particular patient stole ten hymn- and prayer-books from the church, and gave as his excuse that he "wanted to read." This purposeless stealing is seen in the way that they steal not only objects of little value to them, but also things that are obviously difficult to dispose of. One boy ran off with billiard cues, scooters, cycles, ponies, pigs and chickens that he could never "pass off" without being suspected. At another time he would steal objects and then give them away! But his generosity was not consistent, for he could be brutally violent for the most trivial of reasons.

The highest grade post-encephalitics usually provide a substantial part of the talent for the annual pantomime. Cinderella, Prince Charming, the fairy queen, Dick Whittington's cat—these are all roles that these patients have been known to take. The slight tremor of the voice in soprano or baritone can be quite effective! A few of them go in for writing poetry, and one of them wrote the script for two reasonably long plays. Others learn to play chess tolerably well, though they may be liable to upset the board and become abusive, if not actually violent, when the play is against them.

We have said something about the psychotic traits of the post-encephalitic, but it is to be specially noted that the highest grades are much more liable to frank hallucinatory and paranoid states than the lower grades. Their suicidal attempts also are much more likely to be successful.

Neurotic Symptoms following Encephalitis.

Of neurotic symptoms the following account gives some idea of their relative distribution and the nature of their manifestation:

A number of patients are liable to states of anxiety (7 males, 1 female), with extreme terror and apprehension. In the males, particularly, such attacks may be associated with vaso-vagal symptoms, of "angst," precordial distress, headaches, giddiness, and either bradycardia or tachycardia. Some of the cases exhibit profuse sweating, cold clammy extremities, bradypnoea, either with pallor or cyanosis, and complain of associated fainting attacks, though in the present number there are included only those cases in whom very obvious anxiety is present. In a number of cases, too, night-terrors and sleep-walking are associated. The onset of such symptoms as tremors of the hands, rightly or wrongly, has in some of the patients been attributed to anxiety, though they later developed the full Parkinsonian syndrome. It may be tentatively suggested, though little clinical evidence is adduced in support of the hypothesis, that many of the cases of tremor have a masked underlying anxiety neurosis. They shake because they suffer from unrecognized fear, and in some cases the extra-pyramidal system becomes structurally involved secondarily.

It is difficult sometimes to differentiate *hysterical attacks* from malingering, but here we are including such definite symptoms as hystero-epilepsy, hysterical

coughing, vertigo, transient paresis, functional ataxia, inability to walk (usually with astasia abasia, but without organic signs), anuria, and globus hystericus (15 males, 4 females). Self-infliction has been considered separately, and although not included under this heading numerically, has affinities with hysteria, especially in the wide range of different symptoms that may be presented, e.g. sucking gums and spitting blood, nose-picking with epistaxis or haemoptysis, dermatitis artefacta and swallowing foreign bodies, or soap to produce pyrexia.

Vomiting is another frequently recurring symptom that has not been listed numerically in this group. In a few cases it is a manifestation of recurring bilious attacks, but in others it is frequently self-induced. Some of these patients have a marked facility for vomiting, apparently without nausea, while induced vomiting recurred in six males and five females. In some of these, vaso-vagal attacks were associated.

Perversions of appetite are fairly commonly encountered. Refusal of food (8 males, 7 females) may occur as a fitfully recurring exhibition of displeasure from various causes, or may go the lengths of definite hunger strike. More commonly, voracity is met with (18 males, 8 females) which may be expressed as in an inordinately big appetite, with gulping of food in excessive quantities, or may be accompanied by eating frogs' legs, twigs, leaves, grass, paper, hair or swill. Sometimes vomiting is a natural sequel to such debauchery; at other times there occurs cyclic alternation of voracity with refusal of food. Less commonly polydipsia occurs, though this may in some cases be attributable to treatment with large doses of atropine. In some cases there appears to exist a syndrome analogous to that of anorexia nervosa, while in a few cases the picture actually resembles that of pituitary cachexia (Simmond's disease).

In odd cases regurgitation of food occurs analogous to those mentioned with effortless vomiting. These latter have been found with the additional characteristic that they re-swallow their vomitus, while one patient would pass regurgitated food through her lips to her homosexual partner.

Malingering has already been mentioned, but the present cases (9 males, 3 females) have exhibited a variety of different traits, such as feigning stupor or fits, sometimes for the purpose of earning a few coppers, or to escape some allotted task. A few have counterfeited typical post-encephalitic symptoms, such as oculo-gyric crises, while others have feigned other somatic illnesses. It is not always easy to differentiate hysteria, hypochondria and malingering, but for the present purpose we have regarded them as distinct in the sense that hysteria is usually unconsciously motivated, malingering is consciously motivated, while hypochondria is much more usually associated with a paranoid outlook and subjective misery with more delusional content.

Obsessional traits also present some difficulty in differentiating them from delusional symptoms, but in their grosser forms are relatively uncommon in the post-encephalitic (5 males and 4 females). The most common of these is obsessional touching. It is probable that the figures given are an underestimate of the real frequency of this symptom, as it is so frequently considered to be part of the post-encephalitic's playfulness. His teasing and

pestering frequently involve " hanging around " other people, who resent his attentiveness. But many of them display a very marked desire for contact with their fellows. In other cases there appears to be a marked obsession with the idea of death. One patient had a very persistently recurring obsession about post-mortems, another one had a persistent obsessive fear that he would " die a coward ", and yet another had a delusion that two patients were killed daily by brutal treatment by the staff. Syphilophobia, cancerphobia, claustrophobia and agoraphobia also were present in individual cases.

Neurasthenic symptoms appear in a frequent number of cases. Again there is some difficulty in differentiating on the one hand the fatigability that is a frequent accompaniment of lethargy, and also lassitude and exhaustion that is the usual sequel either to a patient's burst of violent energy, or to the epileptoid attacks described elsewhere. The present cases (12 males, 4 females) do not include those in whom fatigability is associated with lethargy or as a sequel to an epileptoid attack. They have, of course, some relationship with each other, as they also are related to symptoms attributable to effort syndrome. Thus many of the patients with ocular crises quite obviously suffer from their attacks towards the end of the day, but the neurasthenic symptoms mentioned are much less fitful or periodic in their incidence, and are frequently part of the general picture of depression, with its attendant incapacity for prolonged effort, flagging energy, distaste for work, or abulia.

Encephalitis and Trauma.

It is always difficult to establish a relationship between the onset of neurological disease, or any other organic disease, and trauma, but in some of the following cases the relationship appears so close that some sort of causal significance appears probable.

It is liable to be said that persons who develop neurological disease have accidents or fall because the pathological process has already begun its course. I certainly do not believe this to be true of all the following cases. In some of them the history of trauma is very slender indeed, but perhaps taken together the whole series is more impressive than an isolated example would be.

These are summarized as follows :

Males.

(1) At 9 years began with what appeared to be encephalitis one week after a fall from a street lamp from which he was swinging. He sustained a blow on the back of the head, and developed a haematoma of the scalp. A week later he began to have diplopia and strabismus, and to fall asleep while eating. He was in hospital five weeks, during two of which he was asleep for most of the time, and began his career of stealing one week later, for which he had three convictions. He became untruthful, lacking in control, exposed himself indecently and made assaults on old women and children. He was admitted to R.S.I. four years later, and has periods of homosexual conduct alternating with stealing from his ward-mates. Physically he shows tremor of the tongue and eyelids, slowness of speech, Parkinsonian facial mask and still (17 years later) sleeps excessively.

(2) Already described under " Psychopathic effects." Had a fall on the head at 9, began with epilepsy some months later, with subsequent attacks of twitches, trance-like states and O.G.C. Diagnosed as a post-encephalitic in 1941 (i.e. thirteen years after admission), though he has no other features of Parkinsonism.

(3) Had a fall on the back of the head at 2, when he banged his head on the fender. No history of encephalitis, but exhibited a large variety of conduct disorders until he was certified 17 years later. These included a conviction for thieving, wandering from home, truancy, stealing knives and guinea-pigs, homicidal threats to girls, assaults, self-injury, attempted suicide, malingering, hypochondria, false accusations against staff with delusions of persecution (*cf.* W. H. Gillespie's case, *J. Ment. Sci.*, 1944, p. 582), bouts of mania with restlessness, noisiness, grandiose delusions that he has made inventions, and sexual attacks on the staff and throwing of faeces at them. He was eventually certified under the Lunacy Act, but had previously been diagnosed as a post-encephalitic on account of a Parkinsonism facial mask and posture, and an external strabismus.

(4) A patient who had encephalitis at 16, but whose condition was considerably aggravated by an accident a year later. He had many conduct disorders, but at the time of his admission to R.S.I. at 31 doubt was expressed as to whether he showed any features of Parkinsonism, and the opinion was expressed that he was not a post-encephalitic. Two years later, however, he showed undoubted Parkinsonism, with slurring of speech, general muscular rigidity (L. > R.), tremor of tongue and lips and Parkinsonian mask.

(5) Was knocked down in a cycle accident at 4, developed " brain fever " some months later, certified as a mental defective at 9, and admitted to R.S.I. at 15. He had been charged with stealing two keys, stole from shops, escaped from home and school, and wandered in the street, with a history of having two or three attacks of temper and depression a week. He had marked paralysis, tremor, slow monotonous and staccato speech and a Parkinsonian gait. He died at 19.

(6) Was very athletic, but at 16 fell off a roof, and developed a left-sided paralysis five days later. He had encephalitis a year later, but was said to have made a good recovery apart from a twitch affecting his left side. He had convictions against him for theft, exposed himself to girls, interfered with girls' clothing, and was admitted to R.S.I. ten years later. He attacked patients, injured himself, tore up sheets and books, soiled the floor deliberately, and was quarrelsome with other patients, often getting hit by them in consequence. He had marked Parkinsonism of speech and gait, with rigidity and tremors, especially affecting the left side, and died at 36, as some post-encephalitics do, from gradual dissolution, without other apparent cause.

(7) Fell on a railway line at 5, developed encephalitis at 6, and before admission to R.S.I. at 18 had had nine convictions against him for stealing, housebreaking and indecent exposure. He absconded, attacked staff, threatened suicide, and practised rectal masturbation. He had sialorrhea, a mask-like face, slurring of speech and tremor of the tongue.

(8) Says he had encephalitis at 9 in 1926, which came on after a hit on the head with a brick. This was followed shortly after by a conviction for theft, when he was sent to an Industrial School. He exposed himself indecently, openly masturbated, stole a purse by feigning faintness and being taken into a house, stabbed boys with a knife, was cruel to pets, killed rabbits and chickens, wandered and absconded a number of times from other institutions. He had a fixed immobile face, with blepharospasm.

(9) Had a bad fall at 7, followed by " meningitis." He went to a special school at 11, and some time later he began to develop attacks which were described as epileptic equivalents, with furor, in which he violently kicked and bit those around him, throwing objects at others, and described these attacks as " a storm that comes over me." He falsely accused a man of making homosexual advances to him, put his hands up his mother's clothes, but was not admitted to R.S.I. until he was 26. At first the signs of Parkinsonism were not very definite, but later showed marked Parkinsonism of attitude, speech and gait.

(10) Had a head injury at 14, in 1921, and was sent to a certified institution three years later, having first tramped the country, slept out, stolen food, and been convicted of stealing lead from a roof. There was no history of encephalitis in this case, and he was not diagnosed as a post-encephalitic until 1930, when he showed left hemiparesis with tremor, slow slurring speech, an attitude of flexion, and mask-like face. He has shown marked delusional formation, said that the staff were shooting people from behind sandbags, that he himself had been shot in the legs, and that a hole in his stomach had been made by a male nurse, who had placed a ball of nicotine or tobacco there. He also falsely believed that his mother

had left him some money (several hundreds of pounds) and that he had never received it. Other delusions were that Hitler had one of his agents in the hospital shooting at people, that somebody he did not know had taken one pint of blood out of him and given it to somebody else, that he had a baby in bed with him, and that he was going to be shot by a rifle aimed at him through the window while he was having his food.

(11) Sustained a depressed fracture of the occipital region of the skull by falling downstairs at school at 8. There are obvious signs of a fracture of the L. parieto-occipital region, confirmed by X-ray. This was followed by an illness described as encephalitis lethargica in which he hardly went to sleep at all for days at night-time, but was very sleepy in the daytime. At 13 he began with another attack of encephalitis in which excessive sleep was marked, and after being charged with offensive behaviour and indecent assault was certified as a defective two years later, and admitted to Rampton at the age of 21, where his chief propensity is the formation of irrational antipathies to other patients, whom he persistently tries to attack. This leads to retaliation, and in consequence much of his time is spent in seclusion both for his own sake, and for those whom he would try to injure. The chief physical signs are slurring of speech, Parkinsonian immobility of face, bent posture and Parkinsonian gait.

(12) Sustained an injury to the head at 8, when he was knocked down by a cyclist. No history of encephalitis, but up to the age of 16 when he was certified M.D. gave trouble to his parents by striking the different members of the family, interfering sexually with other boys, open masturbation, and by conviction for stealing money. At 14 other boys set on him and bumped his head fiercely on the pavement, no doubt after much provocation. He came to Rampton at the age of 28, with a record of vicious and hasty conduct, gave trouble by his frequent fights, masturbated other patients, was destructive and gluttonous with his food. Physically his face showed great immobility, all movements being slow and deliberate, with " quick and lifeless " speech ; he had contracted sluggish pupils, frequent blinking of the eyes, Parkinsonian tremor of the right hand, and some spasticity of all limbs.

(13) Was perfectly normal until he fell from his pram at 15 months, when his development became retarded, and he had to go to a special school. He was certified at 10, and was sent to an institution. His chief propensities then were restlessness, mischievousness, irritability, bad temper, wandering, especially at night, frequent falls, when he often hurt himself, violent outbursts of temper, when he gave and received many blows. At 22 he was admitted to R.S.I. and committed sexual misdemeanours such as sodomy and mutual masturbation, He has Parkinsonian features, such as facial immobility, with gaping mouth. contracted sluggish pupils, slow drawling voice and kyphoscoliosis.

(14) Had a history of encephalitis at 10, which followed a fall from a roof, when he was subsequently unconscious for 24 hours. He was not long before getting about again, but attacks of oculo-gyric crises occurred at 15–16, and certification and admission to Rampton at 17. He had previously had convictions against him for rape and for stealing a motor cycle. He absconded three times, and after being brought back confessed that he had committed a murder. He had auditory hallucinations, marked Parkinsonism of gait with festination, sluggish pupils, increased muscle tone, tremors of fingers and tongue, sialorrhoea, thick monotonous speech and recurring oculo-gyric crises every few days, lasting eight hours.

(15) Broke his nose at 12, followed shortly after by an attack of encephalitis lethargica. His main features before certification eight years later were truancy, wandering, and violence to others. He was admitted to Rampton at the age of 27, but died two months later from lobar pneumonia. He showed Parkinsonian facies and speech, sluggish pupils, oculo-gyric crises, general tremors and incoordination of fine movements.

(16) Fell from a tree and cut his head at 11, followed shortly after by " cerebro-spinal fever," when he slept for a month and had to be taught to walk again, and developed what were thought to be epileptic fits. He was certified as a mental defective at 13, after convictions for stealing, which seemed to be quite purposeless. Thus he stole food, but if he was not hungry would throw it away. He was impulsive, endangered his life by running behind cars, struck at children and then laughed at them, stabbed a man in the back of the head with a cobbler's awl, and showed

strong propensities for climbing trees. After admission to Rampton at 18 he attempted to climb the roof three times, danced on the roof tiles in hob-nailed boots, and stood on a chimney top 60 ft. from the ground on one leg. He threatened suicide several times, bit his left knuckle so viciously as to expose his extensor tendons, frequently cut himself with glass, violently assaulted other patients, sometimes for the purpose of sodomy, picked their pockets, stole keys, and absconded. He had attacks of depression, suffered from auditory hallucinations, and manifested a divergent strabismus, sluggish pupils, frequent blepharospasm, proptosis of the eyes, tremors of the head and arms, with ataxia. He died at the age of 30 with signs of bulbar palsy and progressive muscular atrophy secondary to encephalitis.

(17) Had an injury to the head at 4 and an injury to the back at 5, and began with encephalitis at 7. He was certified as a mental defective at 15, and admitted to Rampton at 19, where his main propensities were impulsive and periodic outbursts of violence, in which he struck nine different patients one day, and twelve the next. He had a special predilection for striking medical officers, threw his food, and deliberately urinated on the floor of the patient's recreation hall. He had periods of mental confusion and showed characteristic Parkinsonian facies, with sluggish irregular pupils, slurring of speech and spasticity of the legs.

(18) After a knock on the head at 4½ developed encephalitis lethargica, but was not certified as a defective until 18, when he was admitted to Rampton. He had attacks of listlessness and helplessness when he lay on the floor and moaned, had frequent falls, soiled his room, lay about the day room half-dressed, and wandered around aimlessly. He tried to abscond and had periods of violence, destructiveness and fits of laughter alternating with depression. He had Parkinsonism of attitude, speech and gait, small pupils, attacks of oculo-gyric crises, and polydipsia. He died a year later from lobar pneumonia.

(19) At the age of 18 he had an accident in the pit when he sustained an injury to the right side of the head and was unconscious for three days, but he seemed to recover quickly and then joined the army. Four years later he developed encephalitis, i.e. at 22. From the age of 16, however, he was convicted of indecent exposure, and up to the time of his admission to Rampton at the age of 26 had 20 convictions against him for indecent exposure and assault, burglary, larceny and begging. He wandered around the country, took things from his own home and gave them to strangers, and proved himself to be an anxiety to his family and the neighbourhood. At R.S.I. he bullied and fought other patients, was liable to impulsive outbursts of violence, followed by helplessness and prostration, masturbated excessively, and practised sodomy. He had marked Parkinsonism of facies, speech and gait. Pupils were sluggish, his tongue and all his limbs showed tremor, though the left side was worse than the right, his posture was bent, and his musculature showed increased tone.

(20) States that he was run over by a lorry at 7, and developed " fits " shortly after. He never had an attack of acute encephalitis, but physically shows sialorrhoea, unequal pupils, nystagmus of the lids, slurring and slowing of speech, a left-sided hemiparesis with muscular rigidity. He had been liable to " attacks of epilepsy " about three times a year, in which the face flushed, the expression went blank, though consciousness was not completely lost, and were sometimes associated with vertigo and vomiting. He was certified as M.D. at 18 and admitted to R.S.I. at 29, and showed impulsively violent conduct, with some mild episodes of incendiarism, when he set fire to paper in the ward. He was liable to periods of depression, when he threatened suicide, and was addicted to fellatio.

(21) Had an accident at 6 when a number of ribs were broken, and developed encephalitis at 7. He was treated at the Winchmore Hill Hospital (L.C.C.) for encephalitis, certified at 14, and admitted to R.S.I. at 19. His chief propensities had been petty thieving, wild behaviour when he ran in and out of other people's houses, shouted in the streets, and used to pretend to have epileptic fits in order to gain sympathy and money. At Rampton he injured himself, was destructive to property, and was addicted to sodomy. He fought the other patients, accused the staff falsely of ill-treatment, grabbed food from other patients' plates, pretended that he was blind in one eye, and feigned illness. Physical signs included sluggish, irregular pupils that failed to react to accommodation, weakness of the left external rectus, inequality of the face, excessive salivation, some atrophy and weakness of the left pectoral muscles, and tremors of the hands. There was no definite history

of oculo-gyric attacks, but there was some fluttering of the eyelids and some tendency for upward deviation of the eyeballs when tested.

(22) Had a shrapnel wound of the head in the First Great War at the age of 16, when he was unconscious for an indefinite period, and began with fits of trembling which were ascribed to " shell-shock." There was no definite history of encephalitis, but he was admitted to R.S.I. at 25, after having two convictions for stealing, and five for drunkenness and begging. There was marked impairment of memory, with changes of a psychotic kind, such as hallucinatory phases, and strong paranoid colouring, depression alternating with grandiose ideas, and morbid obsessions about post-mortems. He had periods of violence, rectal and mutual masturbation, sodomy and absconding. He tried to make a key for absconding purposes, and injured himself. He had Parkinsonism with facial immobility, excessive salivation, monotonous speech, tremors of the eyelids, tongue, hands and feet, and muscular rigidity of both legs, and only in recent years has shown hypersomnolence.

(23) Had a bad fall with injuries to the head at 3, followed by a severe attack of " influenza " in 1923 at 12, which was subsequently considered to have been true encephalitis. He was admitted to R.S.I. five years later after being convicted for an assault on a woman. Had a record of stealing from 1925. He was a wanderer who was noisy, destructive, violent and aggressive, lazy, restless, pestered and bullied other patients. He picked his skin, threw his slippers at other patients, refused work, tried to abscond and indulged in mutual masturbation. He had a large head with circumference of 26 inches, marked internal strabismus and small pupils. Ten years elapsed (i.e. in 1938) before he showed any other physical residua of the post-encephalitic, when he began to develop tremor and rigidity of the right arm and leg, though later developed butterfly flutter of the eyelids, salivation, and tremors of the jaw, lips, tongue and both arms.

(24) Was involved in a severe pit accident in 1929, when he fractured his leg and had a spell of unconsciousness. He was certified as M.D. at 15 in 1929, and had convictions against him for stealing a cycle and setting fire to a hedge. He was involved in another accident in 1937 when he was concussed, and was admitted to Rampton in 1938 because of a sexual offence against a girl whilst he was on holiday from an institution. On admission he had slurring of speech, with fine tremor of the hands at rest, but was not considered at this time to be a post-encephalitic though the possibility was considered. Years later he showed definite Parkinsonism of the right side of the body with dullness of facial expression, the right side of the face being more affected than the left.

(25) Admitted in 1940 at 16, with a previous history of head injury in a motor accident and no previous history of encephalitis. He exhibited a number of mannerisms and habit-spasms, such as sucking his fingers, bending repetitively, putting his hands before his face and blowing into his fingers, rubbing both his eyes after speaking and biting his right thumb. He kicked, stole, tore his clothes, wilfully emptied urine and faeces on the floor and had a voracious appetite. His reflexes were sluggish, and he had lack of control of fine movements, deficient joint sense, and unsteadiness of gait along with Parkinsonian features.

Females.

(1) Had a fall on the back of the head at 10 months, followed by convulsions, and was backward in development, late in walking and talking, and was certified as defective at 22 and admitted to Rampton five years later for violent conduct, throwing stones, attacking people and throwing them to the ground, hitting out, spitting, going into people's houses uninvited and smashing chambers. She fractured another girl's jaw and tried to pull away a ladder a painter was using and threw the paint in the yard. She is dull in expression, salivates frequently, has fixed features and some muscular rigidity.

(2) Developed encephalitis at 14 in 1922, after a fracas in her father's public house, when she sustained a blow on the neck from a beer mug. She had ten convictions against her for larceny over a period of years, but was not certified until 1936, when she was admitted to Rampton. She had sudden outbursts of fury, violently assaulted others, injured herself, was destructive to windows and clothing and exhibited a number of persecutory ideas, especially against members of the staff. She had periods of agitation, and pestered both nurses and patients. She had Parkinsonian tremor of the left hand and foot, with fixed facies.

(3) Developed encephalitis at 12 in 1920, which was preceded by a severe blow on the head while bathing. She was treated at the Newcastle Royal Infirmary, and was away from school for three months. She was not certified as defective until 14 years later, when she was violent to her sister and ran away from her home in Newcastle to London, where she alleged that men molested her. She was admitted to Rampton at 29 in 1937 where she exhibited orgies of smashing, violent struggles and self-mutilation. On one occasion she climbed to the top of a three-storied building and threatened to throw herself down; on another occasion she barricaded the recreation room and smashed 31 panes of glass. She was a petty thief and made sexual attacks on the staff, tied her neck up and periodically had attacks in which she fell to the ground limp and motionless. Apart from periods of excessive somnolence, she shows no marked physical residua of encephalitis.

(4) Was a delicate child and was said to have cried all through each night until she was 2. She did not begin to talk until she was 3, at which age she was knocked down by a taxi, followed shortly afterwards by a fall downstairs. There was no history of encephalitis, but she was certified as a defective two years later and admitted to Rampton at 9 in 1928. The history was that she used to go into other people's houses or motor-cars and refuse to leave them when requested. She was vicious to the members of her family, would bite and kick her mother and baby sister, and would kiss her brother and then scratch him; she bit the legs of a cat and a dog. She wandered at large for miles. At Rampton she removed the blocks from between the hot-water pipes and threw them at other patients, and was so violent over such a long period of time that for many years she had to be kept apart from the other patients, as any opportunity for contact with other people, from the chaplain downwards, would be followed by a violent onslaught. Apart from myoclonic twitchings of the face and of both legs there were no physical signs of Parkinsonism, though Sir Arthur Hall diagnosed her as post-encephalitic. She exhibits a pituitary form of obesity which has been described in cases of this kind.

(5) Banged her head on the table at the age of 9 in 1922, and developed encephalitis seven weeks later which was associated with hypersomnolence. She was certified as defective at the age of 10, after a history of recurring drowsiness at school, nocturnal restlessness and wandering, and violent attacks on her mother. She was admitted to Rampton at the age of 15, where she was liable to recurring attacks of impulsive violence, stealing, and destructiveness. She is a well-marked case of Parkinsonism, with oculo-gyric crises, generalized tremors, spasticity of legs, attacks of hyperpyrexia (temp. 106°) and spends most of her time curled up in bed.

Behaviour Disorders Without Parkinsonism.

Out of 168 male cases, 31 gave a definite history of encephalitis without showing any gross signs of Parkinsonism, such as muscular rigidity or tremor, while 29 gave no definite history of encephalitis, and yet showed definite Parkinsonism. Of 107 female cases 26 gave a definite history without showing gross Parkinsonism, and 10 gave no definite history and yet showed definite Parkinsonism. Of those giving a definite history of encephalitis without gross physical residua, we find a group of behaviour disorders of the most vicious type:

A man who had encephalitis at 7 was admitted to Rampton 16 years later from prison, where he had been committed on two offences of larceny, and had three previous convictions, of fraudulent conversion, stealing a cycle, and stealing £5. He had been a wide traveller, had sought a living as a waiter and as interpreter, and had lived at Marseilles as a dock labourer, but had been deported from France for hitting out at a stranger. He had been dismissed from many jobs because he quarrelled with his employers about trivial things. His criminal career began only two years before admission, but his anti-social career began some years previously. He proved a most intractable case, assaulting other patients, attempting suicide by hanging, and in collaboration with another patient climbed the roof of the institution where he had stayed for 7½ hours, and did £300 worth

of damage by smashing windows and tearing up the roof. He made attempts to abscond, and was involved in a plot to make pass keys from a pattern he had managed to procure. He inflicted injuries on himself, scraped the back of his throat with a chiv he had made himself, and was a sexual pervert, a confirmed masturbator both by himself and with other patients. He also gave a history of having behaved indecently with women prior to admission. He was a Jew, and deludedly felt persecuted in consequence.

The other cases are interesting from many points of view. Details of them are summarized below:

Of 31 male cases with a definite history of encephalitis, without gross Parkinsonism, the details of their physical residua may be summarized as follows:

1. Ocular changes (11 cases):*	
Contracted pupils	2
Irregular pupils	2
Unequal pupils	2
Failure to react to light or accommodation	3
Dilated pupils	1
Staring eyes	1
Strabismus	2
Faulty convergence	1
Diplopia	2
Ptosis	5
Blepharospasm	1
2. Disturbances of sleep rhythm (11 cases):	
With excessive somnolence in the daytime	3
Lethargy	8
3. Disorders of the vegetative nervous system (10 cases):*	
Fainting attacks	6
Bradycardia	4
Hyperidrosis of limbs	1
Acrocyanosis	2
Irregularity of respiratory rhythm	1
4. Perversions of appetite (1 case):	
Voracity	1
5. Endocrinopathies (5 cases):	
Effeminacy of physical constitution	3
Hypogenitalism	1
Hypopituitarism with sexual infantilism and mongoloid features	1
6. Motor symptoms (18 cases):*	
Convulsive attacks	3
Tics	2
Twitching attacks of limbs (myoclonus)	2
Dullness of facial expression	4
Speech defects	5
Slight tremors of hands	6
Muscular hypotonia of limbs	5
Slight hypertonia of limbs	2
Kypho- or lordo-scoliosis	4
Liability to frequent falls	2
Urinary incontinence	1

* A number of the cases presented more than one feature under one or other of the 3 categories so marked.

Although the physical residua of these patients are much less in evidence than the main group, their anti-social menace is indicated by the fact that 25

of them had been at some time or other convicted of various offences classified as follows:

A. Classification of criminal offences of 25 of 31 post-encephalitics without gross Parkinsonism.

I. Damage to property:

1. Travelling on the railway without ticket, stealing cycles, money and articles.
2. Three convictions for larceny.
3. Stealing a cycle.
4. Convictions for housebreaking, larceny and stealing money.
5. Stealing a suitcase and motor-car.
6. Stealing a cycle and a motor-cycle at 14.
7. Thieving.
8. Convictions for stealing money and clothing. Broke into a shop.
9. Four convictions for larceny at 20.
10. Five convictions for stealing beginning at 8. Broke into shop.
11. Stealing tobacco.
12. Stole a cycle.
13. Conviction for larceny.
14. ,, ,, and stole a cycle.
15. Two convictions for theft.
16. Conviction for stealing a handbag.
17. ,, ,, ,, cycle.
18. Two convictions for larceny from age 21, and fraudulent conversion.

II. Damage to others:

1. Three convictions for assault.
2. Conviction for assault at 7 years 11 months.
3. Knifing other children.
4. Violent attacks on mother and another woman.
5. Cut a boy's head with a hatchet.
6. Violent assault on boy of 13. Grievous bodily harm.

III. Sex offences.

1. Indecent exposure to women.
2. Indecency with boys from the age of 14.
3. Two convictions for indecent assault.
4. Indecent exposure.
5. Violent sexual assaults on little girls.
6. Indecent assault on a girl of 7.

B. Summary of anti-social characters of the 31 patients without gross Parkinsonism, for which no convictions were made, previous to admission.

I. Damage to property.

1. Threw stones. Thieves.
2. Steals.
3. ,,
4. Broke into a canteen.
5. Cut gas pipes. Lit fire on bedroom floor.
6. Broke into a shop.
7. Tried to fire a boy's bed.
8. Stole key.
9. ,, ,,
10. Stole a cycle.

II. Damage to others.

1. Attacked the police.
2. Kicked his mother. Stuck pins into children.
3. Struck his father.
4. Struck people frequently with the poker.
5. Killed a patient at a mental hospital, and tried to strangle another with his neck-tie.
6. Tried to strangle his sister and another girl.
7. Strangled a cat and gave the entrails to another cat.
8. Deported from France for hitting a stranger.

III. Sex offences.

1. Talking indecently to small girls.
2. Sex impropriety with baby sister.
3. Sexual attacks on girls.
4. Molested and masturbated boys.
5. Indecent behaviour with girls.

IV. Miscellaneous.

1. Stowaway on a ship.
2. Stayed out all night. 15 situations in two years from age 13. Climbed out of window 13 ft. high.
3. Threw himself downstairs. Ran away from home often.
4. Absconded from another certified institution 14 times.
5. Stowaway on a ship. Left articles in ships. Truant.
6. Vicious wandering.
7. Begging.
8. Absconded from an institution—then convicted of stealing.
9. Twenty situations in six months. Discharged from sea and army because of unsuitability. Absconder from a certified institution nine times in ten weeks, stealing the keys on one occasion.
10. Frequently ran away from home. Wandered into rivers and on the railway. Sudden impulses to do wrong. Absconded eight times from a C.I.
11. Frequent jobs, wandering and begging.
12. Truant.
13. Careless about fire. Took things hot from pans.
14. Truant. Rode through the Severn Tunnel on the buffer of a petrol truck.
15. Dismissed from many jobs for quarrelling with employers about trivial things.

c. Summary of traits of anti-social nature observed at Rampton.

I. Damage to property.

Sixteen patients exhibited destructive properties; these included smashing, tearing clothing, damaging the roof and slates (to value of £300), throwing stones through windows, damaging a weaving loom by putting a pair of scissors into the machinery, trying to set fire to the ward, pilfering, trying to force a window with an iron bar for the purpose of absconding, deliberate breaking of dentures (on five occasions), smashing electric light with a chamber, throwing furniture about and wilfully damaging books.

II. Damage to others.

Twenty-five patients exhibited violent traits to patients and staff. These included homicidal attacks by strangling, impulsive attacks, striking, kicking, biting, scratching, pinching, spitting, attacks with dangerous weapons, such as chisels, buckets, brooms and spades, throwing stones, screwdriver, steel, food cups, knives and billiard balls.

III. Sex offences.

Twenty-eight patients exhibited abnormal sexual activities while in the institution. These included masturbation, rectal masturbation, fellatio and sodomy. One of the patients formed a gang for homosexual practices, three of them sustained injuries to penis during homosexual practices, either from bites or of tearing of the fraenum, two of them were noted as being male prostitutes and importuners, two of them were recorded as sustaining a prolapsed anus and prolapsed rectum from rectal masturbation. This appears to be a not very uncommon sequel to sodomy, and may occur with prolapsed piles and melaena. One patient pushed a match stalk up another patient's urethra, while others made a practice of exposing themselves indecently.

IV. Self-injury.

Sixteen patients were noted as displaying tendencies towards self-injury; seven of whom attempted suicide, one successfully. Others scraped themselves with knives or sharp instruments, deliberately burnt themselves with cigarette ends, reopened old wounds, violently precipitated themselves against a door or wall, swallowed foreign bodies, persistently induced vomiting, impulsively threw themselves out of bed, while another would eat garbage, including worms, plaster, and swill for the pigs.

Of the 26 female cases with a definite history of encephalitis without gross Parkinsonism the following case affords a good example:

It is the case of a girl who was admitted to the London Hospital at the age of 18 in July, 1931, who for 14 days had felt ill and drowsy. She complained of diplopia followed by drooping of the left eyelid, some difficulty in the selection of words, numbness of the upper left limb, and was incontinent of urine, but not of faeces, On examination at that time the chief abnormalities were:

1. Slow monotonous speech.
2. Ptosis oculi (left).
3. Slow nystagmus on lateral fixation to the left.
4. Left external rectus palsy.
5. Defective upward movement of the eyes.
6. On looking to the right, the left eye turns downwards and inwards.
7. Slight left facial weakness.
8. Pupils equal, not quite circular; react to light and on accommodation.
9. Coarse involuntary movements of all four limbs.
10. Spastic weakness of the lower limbs; equivocal plantar responses.

The course of the illness was afebrile; pulse and respiration rate varied between 80–90 and 20–22 respectively. The W.R. was negative in the blood and C.S.F., colloidal gold curve 0022211000, chemical analysis and W.R. were negative, as also that of the blood. Blood count: R.B.C. 5,100,000, Hb 75 per cent. C.I. = ·73. W.B.C. 9,000. Differential count normal.

After four weeks in hospital she became incontinent of faeces as well as of urine and haematuria also occurred. She was then discharged without much progress being recorded to an Isolation Hospital, from which she was sent home after five or six weeks.

At home her conduct was noted as being very eccentric, and in September, 1931, she was admitted to Brentwood Mental Hospital as a voluntary patient, but absconded the following March.

Subsequently she proved a very great trial to her parents, who spent a considerable amount of time trying to find her when the wanderlust came over her, which was fairly frequently. She had five convictions against her for stealing, lived a very immoral life, and was sent to Borstal.

On one occasion she accosted a porter, exposed herself, and offered herself or the price of a cigarette. At the time of her admission to St. Mary Abbot's

Hospital she admitted that all her clothing was stolen property. At this time in 1936 her mental age was assessed at 12 years with scattering. Since her admission to Rampton in October, 1936, she has justified all the remarks made as to her previous character. She exhibited flights of ideas, professed to be a student of music at the Royal Academy, talked at considerable length, was elated and lewd, masturbated openly, exposed herself at the window to male patients, stole other people's property, was destructive to windows, and showed such a strong addiction to snuff that she has been known to exchange valuable gifts sent to her by her own people for quite small quantities. Her mental age, however, has shown considerable improvement, and when it was last tested by Terman-Merrill scale was 17 years 2 months (I.Q. 114). To ordinary clinical examination there are no physical residua of encephalitis, except for contracted and sluggish pupils.

Of the total of 26 female cases with a definite history of Parkinsonism, the physical residua exhibited were:

1. Ocular changes (9 cases):
   - Pin-point pupils 1
   - Irregular pupils 3
   - Pupils with sluggish reaction to light . . 3
   - Pupils inactive to accommodation . . . 1
   - Dilated pupils. 1
   - Exophthalmos. 1
   - Strabismus 1
   - Diplopia 2
   - Ptosis of eyelids 1
   - Tremor of eyelids 1
   - Rotatory nystagmus 1
2. Disturbances of sleep rhythm with alternation of sleep and wakefulness (5 cases):
   - Noctambulism. 2
3. Disorders of the vegetative nervous system (5 cases):
   - Fainting attacks 3
   - Low blood pressure and bradycardia . . 1
   - Raynaud's disease 1
   - Acrocyanosis 1
4. Perversions of appetite (5 cases):
   - Polydipsia 2
   - Urine drinking 1
   - Anorexia nervosa 3
5. Endocrinopathies (15 cases):
   - Obesity 1
   - Sexual hypoplasia 1
   - Pituitary cachexia 1
   - Emaciation without assigned cause . . . 1
   - Amenorrhoea 6
   - Thyroid enlargement 11
6. Motor symptoms (12 cases):
   - Convulsive attacks 3
   - Pseudo-stuporose attacks with attacks of complete listlessness and tonelessness 3
   - Dullness of facial expression 2
   - Facial twitching 1
   - Lower facial palsy 1
   - Tremor of tongue 1
   - Speech defects 2
   - Tremor of an arm 1
   - Pes cavus 2
   - Urinary incontinence 3
   - Prolapse of rectum 1

A. Ten of the 26 cases had convictions against them; these were classified as follows:

I. Damage to property.

1. Five convictions for stealing.
2. Convictions for stealing a cycle, handkerchiefs, stockings and knickers.
3. Conviction for shop-lifting.
4. Conviction for stealing.
5. Conviction for begging.
6. Convictions for arson and stealing.
7. Convictions for begging, stealing and fraud.
8. Five convictions for stealing.

II. Damage to others.

1. Convictions for violent assaults.
2. Three convictions for assaults and wounding.

III. Sex offences.

1. Conviction for prostitution.

B. Summary of anti-social characteristics of the 26 female patients without gross Parkinsonism, without convictions previous to admission to Rampton.

I. Damage to property.

1. Destructiveness.
2. ,,
3. Smashing and throwing stones.
4. Destructiveness.
5. Stealing and smashing.
6. Destructiveness to clothing and smashing.
7. ,, ,, ,,
8. Barricading, smashing and stealing.
9. Destructiveness to clothing.
10. Destructiveness.
11. Stealing.

II. Damage to others.

1. Assaults.
2. Sudden impulsive violent assaults.
3. Stripped a child and put it in a bed of nettles.
4. Biting and scratching.
5. Fighting and throwing stones, etc.
6. Pulling out hair.
7. Pulling out hair of 30 different girls.
8. Excessive violence to others.
9. Fighting and biting.
10. Pulling out hair and throwing stones.

III. Sexual misconduct.

1. Gross immorality.
2. Had an illegitimate child.
3. Immorality and masturbation.
4. Had an illegitimate child.
5. Contracted gonorrhoea.
6. Falsely accused men of immoral intentions.
7. Had an illegitimate child.
8. ,, ,, ,,

IV. Miscellaneous.

1. Running in front of traffic to stop it.
2. Wandering on the railway lines, lying in the road, entering other people's houses and cars; hid herself in a bread van and rode in it for eight miles.
3. Disappeared from home for a few days. Absconding.
4. Absconding.
5. Wandering at large.
6. Absconding.
7. ,,
8. ,,
9. Ran away to London.
10. Absconding.
11. Absconded three times.
12. Absconding.
13. ,,

c. Summary of anti-social traits observed at Rampton.

I. Damage to property.

Eighteen patients exhibited destructive propensities to property, including three roof-climbers. One of these had the agility of a monkey, and even in seclusion developed the property of scaling her interior wall and holding herself in the most impossible of positions. Others would be content to climb the windows. Some stole food and other objects from their neighbours. Some of these cases exhibit the purposeless hiding of things, without any motive other than that of pure mischievousness.

II. Damage to others.

Twenty-four of these patients exhibited violent conduct to other patients and staff.

III. Sex offences.

Five exhibited abnormal sexual tendencies; these comprised two masturbators; one rectal masturbator; one homosexual; one indecent in manner; and one who made sexual attacks on others.

IV. Self-injury.

Twelve patients exhibited propensities for self-injury. These included rubbing the skin with blankets, cutting themselves with glass, throwing themselves downstairs, or out of bed, head banging, swallowing foreign bodies, and writing on the wall in their own blood. They include seven who were suicidal, and who tied up their necks, with one who drank Ronuk with suicidal intent.

Cases with no definite history of encephalitis, yet showing definite Parkinsonism now:

29 male cases (of 168).
10 female cases (of 107).

Of these we may enumerate the following, of whom 23 males and 8 females were not diagnosed as post-encephalitic for some time after admission.

No.	Previous history.	Psychopathic symptoms.	Physical signs and symptoms.
1.	History of measles. Certified M.D. at 10. Admitted R.S.I. at 14½. Diagnosed P.E.L. at 22	Wanton destructiveness at home. Truancy from home for long periods. Roof-climbing. Plays with fire. Noisy. Hypochondriac. Self-injury. Eats rubbish. Masturbator. Threatened suicide	Restless purposeless movements. Lachrymation. Parkinsonian features. Stares. Tremor of hand. Slurring of speech.
2.	M.D. from early age. No history of encephalitis. Brought up at Dr. Barnardo's. At an industrial school at 9. Admitted R.S.I. at 16½. Not diagnosed as post-encephalitic till 24	Conviction for larceny at 9. Many thefts. Violent attacks against patients and staff. Bites. Epileptoid attacks—throwing himself on the floor. Impulsive. Smashes glass. Homosexual. Masturbator	Marked Parkinsonism. Gapes. Spastic R. leg. Self-induced vomiting. Helpless without atropine. Attacks of howling and lachrymation.
3.	Observed as M.D. from childhood. Certified at 18½. Admitted R.S.I. at 20½. No history of encephalitis. Diagnosed P.E.L. at 30	Epileptoid attacks—fits of temper; falls and cuts face. Fell through train window. Attempted drowning. Fights. Impulsive. Got out through skylight. Interferes with children	Coarse Parkinsonian features; fixed, immobile. irregular uneven pupils. Parkinsonian speech. Spastic L. leg. Frequent falls. Pes cavus (R. and L.). Improved on atropine.
4.	Head injury at 9. Epilepsy from 10. Certified M.D. at 16. Admitted R.S.I. at 16. Diagnosed P.E.L. at 29	Violent, destructive. Impulsive. Injures self	Ocular crises. Myoclonic attacks, as well as epileptiform changes. Variable pyramidal signs.
5.	Certified as M.D. at 9½. Admitted R.S.I. at 9½. No history of E.L. Signs of P.E.L. noted from 18—gradually increasing	Conviction at 9—of killing a rabbit maliciously. Has an obsession with death. Pilfers. Wanderer and absconder. Violent. Suicidal. Homosexual	R. hemi-Parkinsonism, with muscular hypertonia noted in 1938. Two years later general muscular hypertonia. Slight tremor of both hands. Fixed Parkinsonian facies.
6.	History of measles. No history of E.L. Fall on back of head at 2. Not diagnosed P.E.L. until 32. Certified M.D. at 20½. Admitted R.S.I. at 21	Conviction for thieving. Wanderer. Truant. Extremely violent and vicious. Self-injury. Sexual attacks on staff. Masturbator. Homosexual. Malingerer. Hypochondriac. Suicidal. Threw faeces at staff. Paranoidal. Delusions of persecution. Certified insane	Parkinsonian facies and posture. R. external strabismus.
7.	Noted as defective from 18 months. Certified at 3½. Admitted R.S.I. at 14½. Unable to read, write or talk properly. No history of E.L. Diagnosed P.E.L. at 19½	Violence to self and others. Screaming fits—? epileptic history. Passive homosexual. Masturbates openly. Bangs his head violently on chairs. Grimaces. Impulsive. Incontinent	Parkinsonian facies. Slurred speech. Rigidity and choreiform movements of arms. Tremors of legs. Festinant gait. Flexion posture of trunk.
8.	Head injury at 14. No history of E.L. Certified M.D. and admitted R.S.I. at 19. Diagnosed P.E.L. at 31	Conviction for stealing lead pipe from a roof. Vagrant. Absconder. Sleeps out. Steals food. Voracious. Hypochondriac. Destructive. Violent. Homosexual. Masturbator. Fantastic delusions. Hallucinosis	Fixed immobile features. L. hemi-paresis, with tremors of arm and leg. Flexion posture. Parkinsonian speech. Chronic otitis media and aural polypi.

No.	Previous history.	Psychopathic symptoms.	Physical signs and symptoms.
9.	Head injuries at 8 and 14. Certified as M.D. at 16. Admitted to R.S.I. at 28. No history of E.L. Diagnosed P.E.L. on admission	Conviction for stealing. Violent. Vicious and hasty. Destructive. Homosexual. Masturbator. Absconder. Voracious. Apathy. Lethargy with impulsive outbursts	"Quick lifeless speech." Palilalia. Stutters. No facial signs of animation. All movements slow and deliberate. Contracted sluggish pupils. Blepharospasm. General spasticity. Tremor R. hand.
10.	Measles in infancy. No history of E.L. Certified as M.D. and admitted to R.S.I. at 11½. Diagnosed P.E.L. two years later	Charged with malicious wounding at 9. Fits of screaming, kicking, biting, throwing objects, smashing and destructiveness. Steals. Climbed fence. Restless. Impulsive	Drowsiness in daytime. Wakefulness at night. Parkinsonian facies; slow and expressionless. Irregular pupils; fail to react to light. Ataxia.
11.	No history of E.L. Certified M.D. at 23½. Admitted R.S.I. at same time. P.E.L. condition gradually increased from 29 when it was first noted.	Five convictions for bestiality, indecent behaviour, exposure and assault. Interfered with little girls. Throws objects, bites, gambles and absconded twice. Defiant, restless, often unsettled. Smashed. Paranoid	Loss of facial expression. Slurring of speech. Loss of motor control. Sluggish pupils. Tremor of eyelids. Spastic R. arm and leg. Tremor of R. arm and leg. Some wasting of R. thigh and calf. Reflexes ++. R. plantar extensor.
12.	No history of E.L. Backward from birth. Certified and admitted to R.S.I. at 18½. Diagnosed P.E.L. on admission	Conviction for thieving. History of absconding. Maniacal outbursts. Wandering. Attacks of violence and destructiveness. Homosexuality. Male prostitute. Swallowed foreign bodies. Self-injury. Attempted suicide. Resistive. Precipitation to floor. Hiding on fire escape. Attacks of screaming and shouting	Fainting attacks. Slurring of speech. Tremor R. arm (on admission). Affected both arms five years later. Two years afterwards showed wasting and weakness of R. arm, with spasticity of both arms and legs, and increased reflexes.
13.	No history of E.L. Backward from early age. At special school for eight years. Certified M.D. and admitted R.S.I. at 20½. Diagnosed P.E.L. at 27	Four convictions for stealing and assaulting a girl. Suicidal attacks and depression. Paranoid. Destructive to windows. Homosexual. Absconded	On admission, noted as fidgety, restless, with poor motor co-ordination and tremor of L. hand and Rombergism. Seven years later: Coarse tremor of all muscles, worse on excitement. Unequal eccentric pupils. Scoliosis to R. Drowsy in daytime. Sialorrhoea. Fainting attacks with precordial distress.
14.	No definite history of E.L. but diagnosed as such before certification and admission to R.S.I. at 14½. Admitted from Home Office School. I.Q. 100 per cent.	Convicted for stealing a cycle. Four unprovoked assaults on women. Attacked mother and sister with a knife. Maniacal outbursts. Impulsive. Absconds. Homosexual. Destructive. Stole hymn books, prayer books and a dictionary from the Institution	Slight tremor R. hand and foot. Voracity. Double incontinence. Myopic.

No.	Previous history.	Psychopathic symptoms.	Physical signs and symptoms.
15.	Certified M.D. and admitted R.S.I. at 14½. No history of E.L. Diagnosed P.E.L. on admission	Violent to mother. Threatened father. Indecent exposure. Asked girls to expose themselves. Beggar. Persistent demands for attention. Sly. Homosexual. Provokes others	Blepharospasm. Facial tics. General muscular tremors. Dorsal lordosis and scoliosis. Monotonous speech. Paralysis and spasticity of L. leg. Absent knee-jerk (R.). Nocturnal incontinence.
16.	Certified M.D. and admitted to R.S.I. at 14½. No history of E.L. Diagnosed P.E.L. on admission	Stole a cycle and other articles. Frequently destructive. Homosexual. Noisy, restless, violent to other children. Deliberately soiled his room	Palilalia. Irregular R. pupil. Tremor R. forearm. Diminished R. knee-jerk. Frequent falls (ataxia). Urinary incontinence. Frequent bouts of fever. Liable to labial herpes.
17.	Shrapnel wound in war—1918. Began with "nerves" at 16. No history of E.L. Certified M.D. at 25½ in 1927. Diagnosed P.E.L. 14 years later and admitted to R.S.I.	Five convictions for begging and drunkenness; two for stealing. Homosexual. Depression. Self-injury. Paranoid. Grandiose. Says he has a piece of iron in his head. Hallucinated. Obsessed by the idea of post-mortems	Advanced Parkinsonism with oculo-gyric crises, rigidity of legs, tremor of eyelids, tongue, hands and feet. Monotonous speech. Sialorrhoea.
18.	No history of E.L. Certified and admitted to R.S.I. at 21½. Illiterate. Diagnosed P.E.L. on admission	Conviction for indecent assault. Outbursts of temper and violence. Homosexual and masturbator. Tried to abscond. Confusional attacks with disorientation. Self-injury.	Retardation of speech. Sialorrhoea. Gaping mouth. Parkinsonian facies. Inco-ordination, rigidity and tremor of forearms. Lethargy. "Epileptoid" attacks. Chronic otitis media.
19.	No history of E.L., though conduct disorders were noted at 15. Certification and admission to R.S.I. at 18½. Diagnosed as P.E.L. at 28	Ten convictions for indecent assault on girls, sexual misconduct with males and animals, and stealing. Indecent exposure. Masturbator. Violent—throws objects. Smashes. Suicidal	Twelve years after admission first noted as showing signs of Parkinsonism. Now has small sluggish pupils, right-sided hemi-Parkinsonism with rigidity and tremor. Tremor of L. hand. Coarse fixed facies. Chronic otitis media.
20.	No history of E.L. In the army at 17. At two mental hospitals before certification as M.D. and admission to R.S.I. at 28. Diagnosed as P.E.L. for first time at 36½	Five convictions—three for stealing, one for indecency, and one for assaulting mother. Violent outbursts—fighting and throwing stones; hypomania. Stole food; begged; pestered patients and staff. Homosexual. Marked addiction to tobacco	Sluggish pupils. Polypnoea. Rapid onset of Parkinsonism a year after diagnosis of P.E.L.
21.	No history of E.L. Had had many situations in employment, and was discharged from the army as an "anxiety neurosis." Certified M.D. at 18 and admitted to R.S.I. at 18½, though I.Q. was assessed at 90 per cent. Diagnosed P.E.L. a year after admission	Two convictions for indecency to small boys. Homosexual pervert. Slovenly, untidy; very persecuted. Depression. Absconder	Diagnosed by Sir Arthur Hall as a P.E.L. with butterfly tremor of lids, unequal pupils, and salivation.

No.	Previous history.	Psychopathic symptoms.	Physical signs and symptoms.
22.	No history of E.L. Certified M.D. at 19½. Admitted to R.S.I. at 20. Only reached standard IV at school. Did not learn to write. History of "fits" in first year. Never worked. Diagnosed P.E.L. at 29½	Morbid attacks of fear; strikes out impulsively. "Talkative and morose" in turns. Delusions of impending death. Attacks of screaming and excitability. Throws objects about. Destructive. Homosexual. Agoraphobia. Is solitary because he knows he might strike out	Hypospadias. Sexual under-development. Increasing muscular hypertonia. Manneristic. Grimaces. Restless movements. Lethargy. Stays in bed for days at a time.
23.	No history of E.L. Certified M.D. at 18. Admitted to R.S.I. at 19½. Diagnosed P.E.L. at 21½	Impulsive outbursts of striking. "Epileptoid" attacks; attacks of blankness, without loss of consciousness, flushing of face, vertigo and vomiting. Homosexual. Threatened suicide. Set fire to paper in the ward dayroom	Slow slurred speech. Sialorrhoea. Nystagmus of eyelids. Flexion posture. L. hemi-paresis with spasticity. Immobility of L. facial muscles. Eunuchoid build (hairless). Genu valgum.
24.	No history of E.L. Certified M.D. at 7. Admitted R.S.I. at 13½. Imbecile grade. Diagnosed P.E.L. at 17 years 5 months	Violent attacks—bites others and himself. Bangs his head on the wall and door. Shouts that he is going mad. Wishes he were dead. Asks others to hit him. Tried to abscond. Destructive to light shades and electric bulbs	Parkinsonian facies. Increased muscular tonus and tremor L. arm. Staring and infrequent blinking. External strabismus. Upward nystagmus. Ataxic gait. Walks on broad base. Defective and slurred speech.
25.	Premature at birth. 5 lb. at birth. M.D. from infancy. No history of E.L. Certified M.D. at 12. Admitted to R.S.I. at 17	Steals, wanders, out late at night. Aimless, impulsive, solitary, destructive, teases other patients. Kicks, bites, scratches. Homosexual and masturbator	Restless and fidgety. Internal strabismus. Paresis of R. face, arm and leg, with some wasting, more in arm than in leg. R. extensor plantar and knee-jerk ++. R. chest moves less than L. Tremor of eyelids. R. hemi-anaesthesia—cigarette burns R. face. Sialorrhoea. Frequent falls (ataxia). Spastic gait.
26.	No history of E.L. Certified M.D. and admitted R.S.I. at 13½. Never went to school. Imbecile grade. Diagnosed P.E.L. at 25	Aimless wanderer; stripped himself in the street. Ran away from home. Turned on gas and water taps mischievously. Violent to other children. Smashes. Throws food at attendants. Spits. Masturbator	Parkinsonian facies. Spasmodic torticollis. Stooping and lurching gait. Scoliosis. Speech slurred and defective. Bilateral spasticity along with hyperextension and flaccidity of fingers. R. extensor plantar. L. facial tic. Double otitis media.
27.	Parents convicted 30 times of neglect to children. Never went to school. Illiterate. No history of E.L. Certified M.D. at 14½. Admitted to R.S.I. at 14½. Diagnosed P.E.L. at 27 after readmission	Convictions for arson, sodomy, theft and rape. Tried to abscond. Roof-climber. Gambler. Fighter. Bully. Smashes	Parkinsonian facies. Dull and slow in speech and general motility. Flat-footed.

No.	Previous history.	Psychopathic symptoms.	Physical signs and symptoms.
28.	Epilepsy from 6–10. No history of E.L. Can't read or write. Imbecile grade. Mother sent to prison for neglect. Immoral and alcoholic. Treated violently by parents. Certified at 16 years 11 months. Admitted to R.S.I. at 21½. Diagnosed P.E.L. at 39	Restless. Threw plant-pots about at night. Destructive to clothing and windows. Violent attacks of striking and kicking. Precipitated himself on the ground. Threw faeces through the window. Impulsive. Agitates and pesters others. Homosexual. Paranoid	Fixed Parkinsonian facies. Sialorrhoea. Stares. Dilated sluggish pupils. Bilateral optic atrophy. Staccato and precipitant speech. Coarse tremor of hands and of legs. Pill-rolling movements of hands. General loss of sensory acuity. Pes cavus. Genu valgum. Serological evidence of syphilis.
29.	M.D. from birth. Certified at 8. Admitted to R.S.I. at 13 years 10 months. Imbecile. Diagnosed P.E.L. at 25	Destructive from 6. Very impulsively violent. Set fire to himself from a lamp. Excitable and restless. Ran away from home. Attacks of alternate laughing and crying. Absconded twice. Hides himself, Urinates on floor deliberately. Injures himself. Tried to cut his throat. Rectal masturbator	Fixed Parkinsonian facies. Salivates. Very hesitant and defective speech. Springy gait. Drooping jaw. Sexually under-developed at 25.
	Females.		
1.	Certified M.D. at 19½. Admitted to R.S.I. at 20½. Imbecile. Diagnosed P.E.L. on admission	Pilferer; beggar. Restless, noisy. Jumped out of window; ran away from home. Broke through panel of door and escaped from it. Threw objects. Smashed windows. Destructive to blankets. Injures herself by rubbing skin with a blanket. Attacks of confusion. Fell out of bed	Parkinsonian facies. Slowness of movements; R. more affected than L.
2.	No history of E.L. Certified M.D. at 16½. Admitted to R.S.I. at 16½. Diagnosed P.E.L. at 22¾	Convictions for theft and assault. Contracted V.D. before 16. Wanders. Absconds. Impulsive attacks of violence. Stuck a needle in her breast. Agitates	Parkinsonian facies. Poverty of movement. Frequent falls.
3.	No history of E.L. CertifiedM.D. at 16. Admitted to R.S.I. at 19½. Diagnosed P.E.L. at 25½	Convicted of " false " pretences for money. Threw herself down a flight of stairs. Wanders. Absconds. Makes false accusations. Suicidal. Smashes. Agitates others. Injures herself with needles. Tied her neck up four times. Depression. Fainting attacks when she is anaesthetic. Hypochondriac	Oculo-gyric attacks lasting for some days, alternating with vertigo and suicidal turns. Fixed facial expression. Stares blankly. Slight tremor of hands. Occasional internal strabismus.
4.	No history of E.L. Certified M.D. at 21½. Admitted to R.S.I. at 21½. I.Q. 98 per cent. Diagnosed P.E.L. at 33	Conviction for stealing in 1925. Sent to Home Office School. Had an illegitimate child in 1931. " Can't leave men alone." Always defiant and obstinate. Worse after 1923. Attacked mother and sister. Makes violent sexual attacks on staff. Delusions of persecution	Parkinsonian facies. Drooping jaw. Recurring dislocation of shoulder.

No.	Previous history.	Psychopathic symptoms.	Physical signs and symptoms.
5.	Doubtful history of birth injury; attributed by parents to air raids. History of measles and whooping-cough. Certified M.D. at 15½. Admitted to R.S.I. at 20½. Diagnosed P.E.L. at 24	Fits of rage if not given her own way. Attacks children. Hides. Tried to abscond, and ran in front of motor cars. Fits of weeping. Smashes. Threw objects. Voracious eater. Pesters others	Epileptoid attacks. Restless. Blepharitis. Marked Parkinsonian facies. Slurred speech. General muscular rigidity. Lethargy.
6.	Doubtful birth injury. Defective from an early age. Illiterate. Imbecile grade. Certified M.D. at 7¾. Admitted R.S.I. at 15½. No illnesses. Diagnosed P.E.L. at 24	Restless; violent attacks in which she strikes or bites. Ran away from school. Throws stones. Destructive to clothing. Impulsive and noisy. Soils and wets herself. Masturbates openly. Injures herself	Tics of shoulder and face. Grimaces. Parkinsonian facies.
7.	No history of E.L. Certified M.D. at 16½. Admitted to R.S.I. at 16½. Diagnosed P.E.L. at admission	Throws objects. Steals. Tried to get out of bathroom window to run away. Threatened to climb roof. Bites and strikes. Destructive to clothing. Openly masturbates. Makes false accusations	Fixed facial expression. Paresis and atrophy of L. arm and L. leg with rigidity. Scoliosis. Speech monotonous. Tics of shoulder, neck and face. Spastic gait.
8.	Attributed to ill-treatment by father of mother in pregnancy. No history of E.L. Certified M.D. at 28¼. Admitted to R.S.I. at 31½. Diagnosed P.E.L. at 33½	Impulsive. Absconds. Thief. Immoral. Smashes. Liable to depression. Injures herself.	Immobile features. Excessive somnolence. Lies down in the ward in daytime to sleep.
9.	No history of E.L. M.D. from 4. Certified at 19¾. Admitted to R.S.I. at 21½. Frequent employments. Diagnosed P.E.L. at 27	Two convictions for stealing. Sent to Industrial School at 18 years 10 months. Ran away from home. Wanders. Absconded. Out late with men. Had an illegitimate child at 20. Depressed. Violent attacks. Attempted suicide. Smashed. Masturbator. Obscene	Oculo-gyric attacks from age 26. "Eyes stuck up" in the evenings.
10.	No history of E.L. Certified and admitted to R.S.I. at 14¾. Diagnosed P.E.L. at 19½ on readmission	Convicted for stealing at an early age. At an approved school. Runs away from home. Romancer. Injures herself.	Fixed Parkinsonian facies.

From the evidence presented by the above cases and others of the series the following tentative conclusions are suggested:

(1) The post-encephalitic state may follow in the course of an acute infectious disease known as epidemic encephalitis. This state may follow shortly after the acute illness, or it may follow much later, and not be diagnosed as the chronic Parkinsonian state for many years after.

(2) The Parkinsonian state or other post-encephalitic syndromes may follow an encephalitis after any of the acute fevers or vaccinia.

(3) Although it is often assumed that a post-encephalitic state must have been due to an acute illness of epidemic encephalitis, cases of this series suggest that it may also be associated with meningitis, chorea, epilepsy, infantile hemiplegia (with or without birth injury), acute anterior poliomyelitis, or cerebral trauma.

(4) It may occur *de novo* as a slowly progressive disease, either following or coincident with mental deficiency. (Grinker, *Neurology*, p. 708.)

(5) There is some evidence that some cases are caused by sepsis of the nasal sinuses or of the middle ear.

(6) There is some susceptibility of the patients to herpes; this may or may not be causative of a post-encephalitic state, but Levaditi and Harvier are of the opinion that it is an important cause. (Grinker, *Neurology*, p. 703.)

(7) Congenital syphilis occurs in some cases, and this may be an aetiological factor in the causation of Parkinsonism. (See W. R. Brain's *Diseases of the Nervous System*, 1933 edition, pp. 408, 445 and 455.)

(8) A few cases gave a history of "sunstroke" as the original cause of the acute illness. Exposure to sun, heat, and fatigue, both physical and mental, have long been considered important contributory factors in bringing on the form of encephalitis known as Japanese B encephalitis. Naka and his associates (quoted in No. 3 Report of the Matheson Commission on Epidemic Encephalitis, Columbia University Press, 1939, p. 167) gave physical exertion in hot sun as the immediate cause of the attack in 74 per cent. of cases.

The Social Background of the Post-encephalitic.

In this present age of social medicine it is not surprising that we should find that in common with many other diseases the post-encephalitic is suffering, not merely from an organic disease of the brain, but also from a "disease" of his social milieu.

There can be no doubt that the post-encephalitic exhibits violent and dangerous propensities, not merely because of his cerebral disease, but also because his environment both cramps and distorts his potential development. We may illustrate this by comparing our present series of 275 cases with the environmental factors found in a series of 262 violent and dangerous juvenile defectives under the age of 16.

Bearing in mind the inadequacy of information about the different factors listed among the environmental predisposing causes, it is probable that the post-encephalitic is less liable to belong to a defective family than the ordinary defective, but the history of defectiveness in the family in 23 cases must bear some relationship to his mentally defective constitution.

Environmental factors.	Post-encephalitic group.	Juvenile defective group.
1. Family history of mental defectiveness	23 (8·4%)	56 (21·3%)
2. Family history of insanity	30 (10·9%)	25 (9·5%)
3. ,, ,, of invalidism	46 (16·7%)	35 (13·3%)
4. Poor economic circumstances	39 (14·2%)	54 (20·6%)
5. Overcrowding	17 (6·2%)	28 (10·7%)
6. Living in slum conditions	28 (10·2%)	11 (4·2%)
7. Illegitimacy	17 (6·2%)	32 (12·1%)
8. Orphanism	104 (37·8%)	106 (40·4%)
9. Parental lack of control	7 (2·5%)	7 (2·7%)
10. Influence of maternal anxiety	3 (1·1%)	9 (3·2%)
11. Prison record in family	6 (2·2%)	9 (3·2%)
12. Parental alcoholism	16 (5·8%)	21 (8%)
13. Immorality of one or other parent	18 (6·5%)	20 (7·6%)
14. Syphilitic parentage	1 (0·4%)	7 (2·7%)
15. Other causes	51 (18·5%)	13 (5·0%)

Insanity, apparently, bears approximately the same relationship to the post-encephalitic group as it does to the generally defective group.

Invalidism presents a relatively more important relationship to the post-encephalitic than to the other defective group. Included in the figure 46 are 18 cases in which neurosis was present in one or other of the parents, 26 cases in which one parent suffered from chronic ill-health, and 7 with a family history of tuberculosis.

Overcrowding and poor economic circumstances appear to be an important associated condition in the post-encephalitic group, though not to the same extent as in the juvenile defective group.

Illegitimacy is approximately half as prevalent in the post-encephalitic group as in the juvenile defective group.

The high incidence of orphanism in some form or other appears to be of equal significance in both groups. The condition of orphanism includes such factors as:

1. Death of one or both parents.
2. Separation of both parents from whatever cause.
3. Upbringing by foster-, step-, or grandparents.

If we try to analyse the relative importance of father or mother, we find that among the males 51 were handicapped by lack of paternal control and 45 by lack of maternal influence, while among the females 52 were lacking in paternal control and 26 in maternal.

The other factors, such as maternal anxiety, prison record in family, alcoholism, syphilis and parental immorality, are of less importance in the post-encephalitic group as compared with the juvenile group.

Other factors which appear to be of some importance in the post-encephalitics are the size of the family.

The post-encephalitic very frequently has a marked inferiority sense which may undoubtedly be aggravated by the physical and mental residua of his disease, but it is also apparent that he suffers from a strong feeling of inferiority as compared with other members of the family.

Of the social classes, by far the largest proportion of the patients came from mining families. These include 16 out of the whole group.

The Course of the Post-encephalitic State.

The progress of the post-encephalitic state, as revealed by the study of the 275 patients admitted to Rampton, is disappointing.

In the males their progress is briefly summarized:

Still remaining at Rampton	108
Slight improvement permitting transfer to Moss Side (a sister institution to Rampton for slightly less violent and dangerous patients)	14
Showing improvement enough to warrant transfer to certified institutions	9
Improved to allow for transfer on licence	1
Discharged from the Mental Deficiency Acts	4
Transferred to mental hospitals	3
Dead	29
Total	168

In the females the corresponding series of figures is:

Still at Rampton	59
At Moss Side	11
Other certified institutions	14
Mental hospital (of whom one was first allowed home on licence, and then went into a mental hospital)	4
Dead	19
Total	107

In view of the difficulty of following up cases after they leave Rampton, little can be said of their subsequent course, but the total of 28 out of 275 to certified institutions, and on licence and final discharge, cannot be considered a very large proportion (10·2 per cent.), though in keeping with other observations (physical effects and social consequences) it appears to be evident that the males fare worse than the females (ratio of 8·3 per cent. : 16·8 per cent.).

As far as morbidity is concerned the post-encephalitic sometimes slowly deteriorates both physically and mentally, and appears to flicker out like a light in the night. In these cases the pathological process may be likened to the degenerative changes that cause death in Schilder's encephalitis, or Pick-Alzheimer's pre-senile dementia. It is more usual, however, for death to be caused by other pathological effects.

In the total of 48 deaths (29 males, 19 females) the causes assigned may be summarized:

1. Progressive dissolution and deterioration without other assigned causes	4
2. Suicide	4
3. Acute confusion	1
4. Bulbar palsy	3
5. Pituitary cachexia	1
6. Acute haemorrhagic pancreatitis	2
7. Heart conditions, including fatty myocarditis, atrophic heart, coronary atheroma, malignant endocarditis	5

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8. Respiratory conditions:	
Asphyxia in a fit	1
Croup	1
Lobar pneumonia	6
Broncho-pneumonia	4
Pulmonary tuberculosis	6
9. Septic conditions:	
Septicaemia and pulmonary abscess	1
Cellulitis of face (pustule of nose)	1
Perforated duodenal ulcer	1
Intestinal perforation (traumatic)	3
Ulcerative colitis	1
Renal abscess	1
Pyelitis	1
10. Malignant disease:	
Carcinoma of cervix	1

Summary.

1. A study of 275 post-encephalitics is presented, based on the cases admitted to Rampton State Institution as violent and dangerous mental defectives.

2. Of 208 cases in which the date of onset is given, 90 occurred in the years 1923, 1924 and 1925.

3. The largest number of admissions in any one year was in 1930, when 43 cases were admitted, but the remaining years between 1929 and 1939 showed a fairly steady admission rate of 14–19 per year. Cases are still being admitted, though in smaller numbers.

4. Whereas the peak years for onset of encephalitis lethargica were 1923 and 1924, the peak years for certification were the five years between 1928–1932.

5. Admissions came from a wide variety of institutions, but those from certified institutions for mental defectives comprised the largest number.

6. Sex incidence is discussed.

7. The effect of encephalitis on mental development is indicated by illustrative cases.

8. Head measurements indicate that encephalitis tends to be associated with shorter head lengths and wider head breadths than those of the average general hospital population.

9. Consideration is given to the incidence of psychotic symptoms, and particular reference to confusional states indicates the importance of the parent-child relationship.

10. The psychopathic effects of the post-encephalitic state are considered in relation to mental grade.

11. Neurotic symptoms following encephalitis are outlined.

12. 30 cases are described in which trauma appears to have played some etiological part.

13. 57 cases without gross Parkinsonism are summarized, especially from the point of view of behaviour disorders.

14. 39 cases of Parkinsonism without definite histories of acute encephalitis are outlined.

15. A summary of the social background of the post-encephalitic is presented.

16. An outline of the course of the condition in the complete series, along with the terminal cause of death in 48 cases, is given.

I am indebted to the Chairman of the Board of Control for permission to use the case material of Rampton State Institution for publication, although the Board of Control cannot take any responsibility for any of the statements contained herein.

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