THE PROGNOSIS IN SCHIZOPHRENIA.

BASED ON A FOLLOW-UP STUDY OF 129 CASES TREATED BY ORDINARY METHODS.

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(Received August 9, 1939.)

Summary of Previous Follow-up Studies of Schizophrenia.

A search was made for statistical studies of the remission rate in cases of schizophrenia which had received no specialized treatment such as hypoglycæmia. The search was confined to the period since 1918, as the period influenced by broader and more hopeful views of the nature and prognosis of "dementia præcox". It was also confined to studies in which the remitted cases had been followed up for some time after discharge to avoid errors due to early relapses. The results of all these statistical follow-up studies are given in Table I. The various writers have classed their results in somewhat different ways, and it has been necessary, in constructing the Table, to fit all the results under standard headings. I therefore do not define further the headings used.

The results in Table I may be summarized as follows:

Table II.

Total number of cases	3970
Number of cases not traced	419
Therefore, number of cases traced	3551

	Number of cases.	Percentage of cases traced.
Complete remission	414	12
Social remission	319	9
At home, improved	186	5
Remitted and relapsed	61	2
Unimproved	2374	67
Died	197	5

https://doi.org/10.1192/bjp.85.359.1224 Published online by Cambridge University Press

Table I.

Author.	Duration of follow-up.	Total number of cases.	Complete remissions.	Social remissions.	At home, improved.	Remitted and relapsed.	Unimproved.	Died.	Not traced.
E. D. Bond (1921)	5 years	47	1	..	9	..	34	3	0
Strecker and Willey (1927)	Average over 5 years	186	38	..	..	..	148	..	0
Braun (1927)	Over 2 years	139	29	26	13	5	62	4	?
Harrowes (1931)	?	100	..	22	7	..	71	..	0
Mayer-Gross (1932)	16–17 years	328	..	89	14	..	66	125	34
Murdoch (1933)	Over 1 year	75	12	..	..	..	52	11	0
Wootton, *et al.* (1935)	Over 2 years	104	18	..	4	16	57	0	9
Horwitz and Kleiman (1936)	Over 7 months	193	9	29	23	..	101	8	23
Braatoy (1936)	Over 6 years	208	..	40	22	..	131	15	..
Langfeldt (1937)	Over 6 years	100	17	2	..	..	81	..	0
Fromenty (1937)	?	271	41	..	..	40	190	..	0
Arnesen (1937)	Over 7 years	815	143	..	..	..	629	0	43
Bond and Braceland (1937–8)	5 years	116	12	..	25	..	66	10	3
Romano and Ebaugh (1938)	Over 9 months	600	1	25	54	..	265	..	255
Cheney and Drewry (1938)	Up to 11 years	500	51	61	..	..	326	14	48
Guttmann, Mayer-Gross and Slater (1939)	Over 3 years	188	42	25	15	..	95	7	4

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The Present Investigation.

This is a follow-up study of all first admissions for schizophrenia to the Royal Edinburgh Hospital for Mental and Nervous Disorders during the five-year period from August 1, 1932, to July 31, 1937. In this study schizophrenia is diagnosed as it is described by Henderson and Gillespie (1936). This series is a representative sample because it includes early cases admitted to the Jordanburn Nerve Hospital as well as the cases admitted to the two mental hospitals and because all classes of society are included.

None of the cases in this series received any of the recently introduced special treatments, such as insulin or convulsion therapy, in the early part of their stay in hospital. Some have indeed received these treatments just recently, but they had by then been in for some time, and only two were improved ; one of these cases was rejected, the other retained, as the patient had previously made a spontaneous remission of over four years' duration.

All the patients received the ordinary hospital treatment, which means: investigation and discussion of the patient's personality, environmental difficulties, and habits of reaction ; discussion of the illness during convalescence ; attempts at re-socialization in the hospital and on discharge ; occupational therapy ; and, when necessary, attention to the physical health, including focal sepsis.

For the follow-up, some cases were personally interviewed by the psychiatrist ; in others a relative was interviewed ; and in others one had to depend on a written report by the patient or a relative. This follow-up was begun in September, 1938, fourteen months after the last case had been admitted.

The general results are :

Total number of cases		133
Cases traced	129	
Not traced	4	

Condition when traced :

Group.	Number of cases.	Percentage of cases traced.
(1) Complete remission	15	12
(2) Social remission	11	8
(3) At home, improved	12	9
(4) Remitted and relapsed	27	21
(5) Unimproved	64	50
Total	129	

These figures have been previously published (Stalker, Millar and Jacobs, 1939).

By (1) *complete remission* is meant absence of all symptoms and the

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presence of insight into the illness ; these patients are leading a normal social life and have returned to their usual occupations.

By (2) *social remission* is meant that the patients are following their usual occupations and are maintaining themselves in the community. They show some schizophrenic symptoms, varying from lack of insight to hallucinations.

By (3) *at home, improved,* is meant those patients who have shown a definite improvement, and who have been cared for at home, without difficulty, for at least five months.

By (4) *remitted and relapsed* is meant those patients who have had a remission of any degree which has allowed them to be at home for at least three months, but who have now relapsed.

By (5) *unimproved* is meant those patients who have not had such a remission.

Study of Prognostic Criteria.

All the usual features, both in the patient's previous life and in his illness, which are regarded as having prognostic significance have been estimated in each case and correlated with the results of the follow-up. I shall discuss them under three general headings :

(1) Those which are clearly significant.

(2) Those which are shown to have no significance.

(3) Those which cannot be discussed fully, owing to the small number of cases showing the criteria concerned.

I. Prognostic Criteria which are Clearly Significant.

A. *The Patient's Previous Habits of Reaction.*

The importance of these has been emphasized by Meyer (1906) and by Henderson (1916, 1918). Henderson's views will be further found in his paper of 1923. " In every case an attempt should be made to size up how satisfactorily or unsatisfactorily the individual has met what was in front of him . . . each case will be looked upon as exhibiting certain individual reactions which must be considered in relation to the personality . . . our prognosis should not, and must not, depend on the symptoms or classification, but it should be brought into close relation with the ætiological factors and the life-history."

In each case I have endeavoured to estimate the adequacy or inadequacy of the patient's reactions in the three major fields—work, social adjustment and sexual adjustment.

In regard to work, the patient was said to have an inadequate adjustment : where he did no work, although his economic situation really required it ;

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where he frequently changed his post without adequate reason or was frequently discharged; and where he worried excessively about his work, worked long hours without being compelled to and worked during his holidays.

In regard to social adjustment, the patient was said to have an inadequate adjustment where he took little or no interest in clubs or organizations, in amusements such as the theatre and cinema, in games and in the company of others; where he was solitary and spent his free time by himself or in his own family.

In regard to sexual adjustment, the patient's reactions were said to be inadequate where there was prolonged worry over masturbation or over extra-marital intercourse; where no interest was shown in the company of the opposite sex, in persons over 21 years; and where marriage had not taken place, in persons over 30 years.

The results were:

	Group.	Number of cases.
Three adequate types of reaction	1	8
	2	1
	3	2
	4	1
	5	2
Total		14

	Group.	Number of cases.
Two adequate and one inadequate type of reaction	1	7
	2	6
	3	2
	4	10
	5	7
Total		32

	Group.	Number of cases.
One adequate and two inadequate types of reaction	1	0
	2	2
	3	4
	4	6
	5	17
Total		29

	Group.	Number of cases.
Three inadequate types of reaction	1	0
	2	2
	3	1
	4	6
	5	25
Total		34

	Group.	Number of cases.
Records insufficient for estimation of reaction types	1	0
	2	0
	3	3
	4	4
	5	13
Total		20

These results are of great significance, and give ample statistical support to the views already quoted.

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This analysis of the reactions must be clearly distinguished from an analysis of the personality type. The majority of people who develop schizophrenia have schizoid personalities, but some are well adapted nevertheless while others are not. The schizoid personality in itself must not be equated with maladaptation without further consideration of the facts.

I have therefore attempted to assess the previous personality of the patients in the series. For this I have had to depend upon the ordinary case-records; a very large proportion of "schizoids" appears, and it would be better, in view of the rather scanty material in some records, to speak of the presence of schizoid trends rather than schizoid personalities.

It was found that 95 patients had shown "schizoid trends" in their previous personalities; the small group of other personality-types did not show a higher recovery-rate, thus demonstrating that "schizoid trends" are not to be equated with inadequate personality reactions.

Other writers have expressed conflicting views on this topic; the discrepancy is probably due to the degree to which they have intermingled "reactions" and "personality".

Williams and Potter (1921) claimed that the shut-in type of personality might be regarded as one of the points for a favourable prognosis. Strecker and Willey (1927) said that a constitutional "shut-in" personality argued for an unfavourable prognosis, while a "shut-in" personality produced by the environment did not necessarily weigh the balance against recovery.

Lewis and Blanchard (1931–2) found in 100 "recovered" cases of schizophrenia that the early history of 36 revealed the cyclothymic temperament with extraverted tendencies in the foreground; the prepsychotic history of 64 showed a typical schizothymic temperament with tendencies of introversion.

Langfeldt (1937) considered that a schizothymic temperament was of unfavourable prognostic import.

B. *The Effect of the Relative Proportions of Constitutional and Environmental (and Psychogenic) Factors.*

An attempt was made to estimate the relative proportions of these factors. A case was said to be of constitutional origin when no environmental or psychogenic factor could be discovered. As the proportion of the latter increased they were correspondingly increased in the estimate, so that there are four groups in all:

(1) Constitutional factors only present.

(2) Constitutional factors outweigh the environmental.

(3) Constitutional and environmental factors appear to be of equal importance.

(4) Environmental factors outweigh the constitutional.

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The results are :

	Group.	Number of cases.
(1) Constitutional factors only present	1	2
	2	5
	3	5
	4	13
	5	34
Total		59

	Group.	Number of cases.
(2) Constitutional factors outweigh the environmental	1	2
	2	2
	3	3
	4	12
	5	18
Total		37

	Group.	Number of cases.
(3) Constitutional and environmental factors of equal importance	1	6
	2	2
	3	1
	4	1
	5	10
Total		20

	Group.	Number of cases.
(4) Environmental factors outweigh constitutional	1	5
	2	2
	3	1
	4	1
	5	0
Total		9

	Group.	Number of cases.
(5) Records insufficient	3	2
	5	2
Total		4

These results are of great significance ; they demonstrate clearly the progressive and dramatic improvement in results between the first group—constitutional factors only—and the fourth group—environmental factors outweighing constitutional. Similar conclusions have been reached by the majority of writers.

c, *Duration of Illness Before Admission.*

This is notoriously difficult to estimate in a condition in which one so often sees a gradual transition from a schizoid personality to a schizoid psychosis. I have estimated the duration from the time when the first symptom of illness was observed by the patient or by his family. The results are :

	Group.	Number of cases.
Under one month	1	6
	2	0
	3	3
	4	4
	5	4
Total		17

	Group.	Number of cases.
Between one and six months	1	6
	2	4
	3	7
	4	8
	5	11
Total		36

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	Group.	Number of cases.
Six months to two years	1	2
	2	5
	3	2
	4	9
	5	29
Total		47

	Group.	Number of cases.
Over two years	1	0
	2	2
	3	0
	4	6
	5	17
Total		25

	Group.	Number of cases.
Records insufficient	1	1
	5	3
Total		4

These figures show clearly how favourable a recent onset is. This opinion is expressed by most authorities.

A somewhat different grouping on the basis of "acuteness" of onset gave similar results.

D. *The Presence of an Affective Response.*

The degree and nature of the affective response was estimated in each case which was grouped according to the predominant type. This is not to say that the affective response was a constant one. It may at times have been replaced by another affect or by periods of apathy. A stupor reaction was included as a type of affective response. The results are :

	Group.	Number of cases.
Suspicion	1	0
	2	0
	3	1
	4	1
	5	3
Total		5

	Group.	Number of cases.
Stupor	1	3
	2	1
	3	2
	4	4
	5	5
Total		15

	Group.	Number of cases.
Elation depression or both	1	12
	2	9
	3	5
	4	17
	5	22
Total		65

	Group.	Number of cases.
Apathy	1	1
	2	1
	3	4
	4	5
	5	34
Total		45

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These figures indicate most clearly how favourable is the presence of an affective trend and how unfavourable is the presence of apathy.

The group of 15 stupors shows only 3 complete recoveries, which is rather a low figure. It must be remembered that one is dealing here with stupors which had been regarded as definitely schizophrenic—from a longitudinal examination of the case—and that the depressive stupors are excluded from the series by the same method. Strecker and Willey (1927) found that stupor was not so useful prognostically as they had anticipated.

A slightly different grouping has been made, in which the presence or absence of disharmony of mood and thought is considered. As will be understood, a larger number of cases showed disharmony than showed apathy, as disharmony does not necessarily correlate with apathy. The results are :

	Group.	Number of cases.		Group.	Number of cases.
Disharmony absent	1	10	Disharmony present	1	5
	2	10		2	1
	3	7		3	5
	4	19		4	8
	5	16		5	47
Total		62	Total		66

Records insufficient : 1 case in Group 5.

These results gave ample support to the view that good harmony of mood and thought is of favourable prognostic import.

The affective state has been studied from a third point of view. I have attempted to differentiate the cases showing definite manic-depressive symptoms. For the analysis of each case I have taken this to mean three typically associated manic-depressive symptoms, such as : Depression, retardation and feelings of unreality and depersonalization ; depression, self-reproach and threats of suicide ; elation, flight of ideas and psychomotor over-activity. The results are :

	Group.	Number of cases.		Group.	Number of cases.
Manic-depressive symptoms present	1	9	Manic-depressive symptoms absent	1	6
	2	4		2	7
	3	6		3	6
	4	12		4	15
	5	12		5	51
Total		43	Total		85

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Records insufficient : 1 case in Group 5.

These results indicate clearly how favourable is the presence of a combination of manic-depressive symptoms ; this is in accord with the general opinion, e.g., Hunt and Appel (1936), Langfeldt (1937).

E. *The Type of Schizophrenic Reaction.*

Schizophrenia is usually divided into four sub-groups : the simple, catatonic, hebephrenic and paranoid.

For the general purposes of this study I have confined myself to the case records as taken soon after admission, otherwise comparative studies of symptoms would be vitiated by an undue proportion of positive findings in the unimproved cases. When grouping the cases on the same basis I found a number, containing a large proportion of favourable cases, which could not readily be fitted into any of the standard sub-groups. These are grouped as acute cases. The results are :

	Group.	Number of cases.
Acute	1	7
	2	2
	3	5
	4	5
	5	4
Total		23
Paranoid	1	2
	2	5
	3	3
	4	8
	5	22
Total		40
Simple	1	2
	2	3
	3	1
	4	1
	5	7
Total		14

	Group.	Number of cases.
Catatonic	1	3
	2	1
	3	2
	4	7
	5	20
Total		33
Hebephrenic	1	1
	2	0
	3	1
	4	6
	5	9
Total		17

Demented on admission : 2 cases in Group 5.

The figures do not demonstrate any significant difference in the recovery-rates in the catatonic, paranoid, hebephrenic and simple sub-groups.

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The " acute " cases show a very significantly higher recovery rate than the others, and this calls for some discussion.

Henderson (1918) reported a high recovery-rate in acute dementia præcox-like reactions in war-time ; of these, the hallucinatory paranoid state was the predominating type. Theodore Hoch (1922) reported seven cases of acute psychoses with symptoms resembling dementia præcox and subsequent recovery.

Kasanin (1933) reported nine cases of what he called " acute schizo-affective psychoses ". I quote :

> " Preceding the attack there was a difficult environmental situation which served as a precipitating factor. The environmental stress was chronic in some cases and acute in others. . . . The personalities of our patients were not very much different from the general run of people in the community. They have been fairly well adjusted socially and were considered to be well integrated individuals who apparently got a good deal of satisfaction out of life.
>
> " They are keen, ambitious, forward, some of them rather seclusive, others quite sociable. A subjective review of their own personalities reveals that they are very sensitive, critical of themselves, introspective, very unhappy and preoccupied with their own conflicts, problems and sometimes with life in general. These conflicts and problems may go on for years before the patient breaks down, and they are not apparent to others. The interesting thing about the psychoses is that one is able to reconstruct them psychologically when one reviews the various symptoms and behaviour with the patient after his recovery. The fact that there is comparatively little of the extremely bizarre, unusual and mysterious, is what perhaps gives these cases a fairly good chance of recovery. They do not exhibit any profound regression socially, although the thought-processes show primitive and infantile modes of thought. There is very little passivity in these cases. Their reaction is one of protest, or a fear, without the ready acceptance of the solution offered by the psychosis.
>
> " These psychoses occur in young men and women and tend to repeat themselves. In our series there was usually a vague history of a previous breakdown with complete recovery, and then a recovery again after the psychosis which we observed.
>
> "A review of the dynamic factors in the psychosis shows a severe conflict between the instinctive drives of the patient, usually sexual, and the barriers and repression imposed by the social group. . . . There is also a marked feeling of inferiority, especially in the subjective notions of these patients, that they are not able to adjust themselves socially. The psychosis is usually ushered in by a latent depression and a certain amount of renunciation going on for some time until the more dramatic picture which we are describing here becomes apparent."

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Langfeldt (1937; quoted by Schaeffer, 1938) said that the atypical schizophreniform states have usually a good prognosis.

The analysis of the symptoms has shown how the favourable cases in this series correspond in many ways to those reported by Kasanin and Langfeldt.

II. Factors Which are Shown to Have No Significance.

A. *Family History.*

Only cases of a frank psychosis or of alcoholism in the siblings, parents, parents' siblings and grandparents were recorded.

The resluts are:

	Group.	Number of cases.	Percentage.
Negative family history	1	9	13
	2	8	12
	3	5	7
	4	15	22
	5	30	45
Total		67	
Positive family history	1	6	12
	2	3	6
	3	4	8
	4	12	23
	5	26	51
Total		51	
Records insufficient	3	3	
	5	8	
Total		11	

These figures show that a positive family history does not make the prognosis more grave in the average case. However, of three cases with more than two other members of the family affected all progressed to dementia without remission. Strecker and Willey (1927), Murdoch (1933), Horwitz and Kleiman (1936), and Arnesen (1937), also concluded, on the basis of follow-up studies, that heredity did not influence prognosis. Langfeldt (1937) went so far as to say that hereditary antecedents were most often found in atypical schizophrenics with complete or incomplete recoveries, while the typical dementing cases showed hereditary loading less often; Hunt and Appel (1936) made similar comment.

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B. *Influence of the Patient's Sex.*

There were 64 males and 65 females in the series; the recovery-rates were substantially the same in the two sexes.

C. *Educational Attainment.*

This was also found to have no bearing on the prognosis, the recovery-rates being much the same whether the patient had attained primary school, secondary school, or university education.

D. *Age at Onset of the Illness.*

Analysed in five-year groups, the recovery-rates showed no significant differences between the ages of 16 and 35 years. However, of 8 patients whose illness began before the age of 16, none attained even a social recovery; and of 6 patients whose illness began after 35, only one attained a social recovery. These samples are so small that one hesitates to draw conclusions.

E. *Tuberculosis.*

A personal or family history of tuberculosis in any form occurred in 23 cases, but had no influence upon the recovery-rate.

F. *Focal Sepsis.*

This was found in 31 cases, and although it was appropriately treated in almost all cases, there was no improvement in the recovery-rate in this group.

G. *Regressive Symptoms.*

Thirty-six cases showed such symptoms in their behaviour or thought content, but the recovery-rate was the same in these as in the remaining cases.

H. *Hallucinations.*

The results are:

	Group.	Number of cases.		Group.	Number of cases.
Hallucinations present	1	7	Hallucinations absent	1	8
	2	6		2	5
	3	8		3	4
	4	16		4	8
	5	47		5	17
Total		84	Total		42

Records insufficient: 3 cases in Group 4.

The figures would appear to be slightly better in the cases without hallucinations, but I do not think the differences are statistically significant.

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I. *Symptomatology Reflecting Ætiology.*

This was present in 23 cases, without influencing the recovery-rate.

III. Factors Which Cannot be Discussed Fully Owing to the Small Number of Cases Showing Them.

These included :

A. *Race.*

B. *Body-build.*—The series included 55 asthenics, 10 athletics, 12 pyknics, 9 dysplastics and 2 deformed patients. The records were insufficient for estimation of the type of body-build in the other cases. The figures available did not appear to yield any prognostic indications.

C. *Occupation.*—The series was divided into seven groups, according to the type of occupation. Each group was small and the figures not significantly different, except in the case of persons of no occupation. There were 17 such patients, of whom only one attained a social remission, the remainder all falling into Groups 4 and 5. Only one or two of these persons were financially independent. In the others the lack of occupation depended on long-standing inability to adapt to working conditions, and this does appear to carry a poor prognosis.

D. *Marital status.*—There were 118 single patients, 9 married, 1 divorced and 1 widowed. The high proportion of single patients correlates mainly with the age-incidence of schizophrenia ; partly, perhaps, with the sexual inadequacy of schizoid personalities.

E. *Endocrine disorder.*—Twenty cases showed endocrine disorder *before* the onset of the schizophrenia. The disorders recorded were never of gross type ; they included most of the cases previously classified as having dysplastic body-builds ; most of the others showed mild degrees of hyper- or hypothyroidism, or had a long history of menstrual irregularities.

F. *Insight.*—Fifteen cases had a good insight, 33 had partial insight, and 79 had none, as estimated at the time of admission. No significant conclusions could be drawn. I was not able to investigate the insight at the time of discharge.

G. *Clouding of consciousness.*—It appeared significant that clouding was present in 6 out of 15 cases which made a full recovery. Otherwise it did not influence prognosis.

H. *The hyperglycæmic index.*—The index had been estimated in 50 of the cases, but no prognostic conclusions could be drawn from the figures.

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SUMMARY.

A historical review is made of the results of follow-up studies of schizophrenia which have been published since the War. By adding the reported figures together the following table was made:

Total number of cases traced: 3,551.

	Number of cases.	Percentage of cases traced.
Complete remission	414	12
Social remission	319	9
At home, improved	186	5
Remitted and relapsed	61	2
Unimproved	2374	67
Died	197	5

The present investigation is a follow-up study of all first admissions for schizophrenia to the Royal Edinburgh Hospital for Mental and Nervous Disorders during the five-year period from August 1, 1932, to July 31, 1937. None of these cases received any special treatment, such as convulsion therapy. The follow-up study was begun in September, 1938. The general results are:

Total number of cases	133
Cases traced	129

Condition when traced:

	Number of cases.	Percentage.
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Remitted and relapsed	27	21
Unimproved	64	50
Total	129	

All the usual features, both in the patient's previous life and in his illness, which are regarded as having prognostic significance have been estimated in each case and correlated with the results of the follow-up.

It was found that the following features were of favourable prognostic import:

(1) Healthy habits of reaction in the patient's previous life.

(2) A preponderance of environmental and psychogenic causes for the illness over the constitutional factors.

(3) An acute and recent onset of the illness.

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(4) Well-retained affective response in the illness, with absence of disharmony between the affect and the thought-content. Manic-depressive symptoms were favourable.

(5) An acute type of schizophrenic illness, which cannot be fitted into any of the four standard sub-groups.

It was found that the following features had no prognostic import :

(1) A family history of mental disorder.
(2) The patient's sex.
(3) The patient's educational attainment.
(4) Age at the onset of the illness.
(5) Tuberculosis, whether in the patient or in his family.
(6) The presence of focal sepsis.
(7) The presence of regressive symptoms.
(8) The presence of hallucinations.
(9) The symptomatology reflecting the ætiology.

A number of other features were investigated, but no conclusions could be drawn as the number of positive instances was too low to be considered.

The case records of the fifteen patients with complete remissions were analysed from the point of view of the *general reaction* and were classified as follows :

Group I.—One case of psychopathic state with an intercurrent paranoid-schizophrenic episode.

Group II.—Schizophrenic episodes in schizoid personalities.

Sub-group A.—Seven patients who had all passed through a long phase of subjective conflict and maladjustment. These cases all correspond closely to those which Kasanin described in his series of acute schizo-affective psychoses. After a short illness the patients recovered, and several became better adjusted than they had ever been before.

Sub-group B.—Four cases of schizoid personality, well-adapted in a sheltered environment, who broke down following minor stresses and then made a quick recovery to their usual level.

Group III.—Two cases in which anxiety symptoms were prominent at the onset.

Group IV.—One case in which the records were insufficient for full analysis of the reaction.

Although these remitted cases might be said to be atypical, there were cases in the unrecovered groups whose condition on admission was similar to that of these remitted cases.

I wish to thank the Dean of the Faculty of Medicine, Edinburgh University, for permission to publish this summary of my M.D. Thesis ; and I thank Prof. D. K. Henderson for permission to use the case-material.

https://doi.org/10.1192/bjp.85.359.1224 Published online by Cambridge University Press

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