PROGNOSIS IN SCHIZOPHRENIA.*

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IN the world of mental diseases schizophrenia may well be termed "the sickness that destroyeth in the noonday." Although the replacement of Kraepelin's nomenclature of "dementia praecox" by Bleuler's term, "schizophrenia," has carried with it a general recognition that the chance of recovery is better than had been originally anticipated, the doom of those who do not recover is amongst the most dreadful meted out by any disease. It so frequently means a body apparently fully alive with a mind permanently impaired or virtually dead. Despite the obvious desirability of assessing the prognostic chances of the individual case, the statistical works published up to date have failed to establish agreement as to how this may be done. The object of this paper is to combine a detailed examination of the literature with a personal study of the histories of over 100 cases of schizophrenia in an effort to reach a definite conclusion in this matter. The paper will be divided into the following parts: I, a detailed survey of the literature; II, the outcome of 120 cases studied by myself; III, a comparison of remission rates and prognostic factors in cases treated by cardiazol.

Prognosis, which means the possibility of forecasting the course of a disease, may be viewed from two different points of view: firstly, the chances of recovery or progress indicated by statistical figures; and secondly, the significance of various signs and syndromes in estimating the prognosis of the individual case. In this thesis both aspects of the subject will receive attention.

PART I.

A Critical Survey of the Literature.

A. VARIATIONS IN THE CRITERIA OF DIAGNOSIS AND RECOVERY.

The necessity of comparing the remission rates of cases treated by cardiazol and insulin with those treated by the ordinary mental hospital methods of a routine life, good food, attention to physical health, occupational therapy, etc., has revived interest in various statistical studies of the remission rates in the latter. It is usual for the champions of the modern therapies to quote merely

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the figures of such previous studies with little reference to the angles from which the various authors have approached their subjects, the result being that the comparatively wide discrepancies in the figures renders reliable deductions impossible. It has seemed to me that a more detailed examination of the articles concerned, with particular reference to the individual author's standpoint, might lead one to effect a synthesis on a common basis from which valid conclusions might be deduced. That this cannot be done by mere quotation of figures is due to the differences in the criteria employed by the authors concerned in diagnosing the incidence and remission of this disease. As a preliminary to a survey of literature on the subject, it will be well, therefore, to discuss briefly what forms these differences take.

(a) *Diagnosis.*

Fully to comprehend the varying criteria of diagnosis necessitates a knowledge of the evolution of Kraepelin's conception of dementia praecox to Bleuler's conception of schizophrenia, and also an understanding of the implications of the "reaction" types of Adolf Meyer, the "biological" types of Kretschmer and Mauz, the "temperamental" types of Jung, etc. For a detailed discussion of this subject the reader is referred to the comprehensive articles of Adolf Meyer (1929) and James V. May (1932) on the subject. In the meantime a brief survey of certain basic facts would not be inappropriate.

Bleuler (1936) states: "Schizophrenia does not appear to us as a disease in the narrower sense, but as a disease group. It is characterized by a specific kind of alteration of thinking and feeling, and of relations with the outer world that occur nowhere else." Aubrey Lewis (1935), says: "Schizophrenia may be regarded for diagnosis and other clinical purposes as a form of maladaptation in which there are certain characteristic defects of inner harmony and consistency in behaviour, thought and emotion." Bleuler (1936), summarizing what is included in the term "schizophrenia," says: "Under schizophrenia are included many atypical melancholias and manias of other schools (especially nearly all 'hysterical' melancholias and manias), most hallucinatory confusions, much that is elsewhere called amentia (the continental term for the confusional syndrome), a part of the forms consigned to delirium acutum, motility psychoses of Wernicke, primary and secondary dementias without special names, most of the paranoias of the other schools, especially all hysterically crazy, nearly all incurable 'hypochondriacs,' some 'nervous people' and compulsive and impulsive patients. The diseases especially distinguished as juvenile and masturbatory forms all belong here, also a large part of the puberty psychoses, and the degeneration psychoses of Magnan. Many prison psychoses and the Ganser twilight states are acute syndromes based on a chronic schizophrenia. If we still come across reactive psychoses included under this head, then it is due to defective diagnoses, not to the classification of a system.

"*Latent schizophrenias* are very common under all conditions, so that the 'disease' schizophrenia has to be a much more extensive term than the pronounced psychosis of the same name. This is important for studies of heredity. At what stage of anomaly anyone should be designated as only a 'schizoid' psychopath, or as a schizophrenic mentally diseased, cannot at all be decided as yet. At all events, the name latent schizophrenia will always make one think of a morbid psychopathic state, in which the schizoid peculiarities are within normal limits. Social uselessness, catatonic symptoms, hallucinations, delusions make certain the practical diagnosis of the acute mental disease."

A little later he continues:

"Schizophrenia may be combined with other psychoses; it may undoubtedly originate on top of oligophrenias, and may be followed by senile psychoses. Occasionally also a paresis, more frequently alcoholism, eventually with delirium tremens or hallucinosis, complicate the picture. There is probably also a mixture of manic-depressive insanity, and of epilepsy with schizophrenia. The associations of these two diseases with dementia praecox are undoubtedly multiform and not at all clear, no more than the delimitation of the combined from the simple forms with only apparent mixture symptoms."

May (1932) comments on Bleuler as follows:

"To insist, moreover, as Bleuler apparently does, that a mere schizophrenic colouring in a given psychosis automatically forces it into the dementia praecox group is no more logical than it would be to assign every excitement or depression to the manic-depressive one, or call all deliria alcoholic in origin. Marked schizophrenic colourings often appear in manic-depressive insanity, in genuine involution melancholia, and in many other psychoses. A careful study of the history of these cases will show that they were originally psychopathic, intellectually defective, or showed some other complicating factor unrelated in any way to dementia praecox."

May further points out that Bleuler insists that dementia praecox and schizophrenia are synonymous, but differentiates the two himself in the following manner:

"Patients are often brought to the hospital with a positive diagnosis of dementia praecox and show a fully developed schizophrenic syndrome which clears up entirely in a few weeks or in several months at the outside. Investigation shows that these individuals were in some instances feebleminded from birth, a condition which is found to be unchanged in any way after the recovery from the schizophrenic episode which was responsible for their coming to the hospital. There is no logical reason for the assumption that this is a combination of two diseases, mental deficiency and dementia praecox, or that the latter psychosis has been engrafted upon the former condition. There are at this time few, if any, reasons for thinking that the feebleminded ever develop a genuine dementia praecox. They are often subject to schizophrenic episodes just as they frequently develop other transitory attacks which are expressions

of their fundamental deficiency and are not disease entities such as schizophrenia. That the feebleminded are subject to psychotic episodes has been known for centuries. Schizophrenic episodes occur, moreover, in psychopathic personalities, in epilepsy, hysteria and other psychoneuroses, alcoholism, senility, toxic and exhaustive states, and even in pellagra. They are very common in the involution period of life in individuals who have never before shown any suggestions of dementia praecox. This is no more late schizophrenia than syndromes of the same kind in epilepsy are dementia praecox. . . .

"That these episodic affairs do not belong in the dementia praecox group is shown by the fact that there have been no previous evidences of that disease in the patient's history, which does show early suggestions of complicating factors such as psychopathic personality or mental deficiency, etc.; that the syndrome completely disappears in a very short time; that it is followed by no definite evidences of dementia praecox later and may never show any further schizophrenic suggestions; that the episode on close analysis is nearly always atypical in character; and finally that the recovery made is nearly always complete."

If the above passages are quoted liberally and fully, it is because they illustrate so well the nature of the problem. Reading between the lines, it is easy to comprehend that there are those who follow Bleuler in a very broad interpretation of the term "schizophrenia" (see reference to Burghölzli Hospital admissions below); those who have merely replaced the term "dementia praecox" by that of "schizophrenia," while retaining Kraepelin's conceptions; and thirdly, those who, although they agree largely with Bleuler, are not prepared to extend the diagnosis of schizophrenia to all cases tainted with schizophrenic symptoms.

The attitude which the various schools of psychiatry have adopted in this matter has been largely determined by the views they have held as to the aetiology of schizophrenia. The tenets of the so-called "biological" school, which is that adhered to by most continental psychiatrists, is based mainly on the teachings of Kraepelin and Kretschmer. Kraepelin's original conception of dementia praecox was confined to a group of so-called endogenous psychoses. Long before Bleuler embraced this conception in the term "schizophrenia," psychiatrists had sought to unravel its aetiology. Work had been done by Rüdin, Kahn and others on the factor of heredity; Jung had shown that the introverted temperaments were particularly liable to this disease, and investigations into other factors of constitution had been made. The latter work culminated finally in Kretschmer and Mauz's work claiming that the asthenic, the athletic and the dysplastic types of bodily build are more prone to develop schizophrenia than the pyknic build. This school would seem to consider schizophrenia as essentially an endogenous disease whose presence in a patient is signified by certain definite mental symptoms called process symptoms, and whose degree of severity may be gauged to a certain

extent by the form which the symptoms take. They also stress that these process symptoms occur in persons prone to the disease through constitutional factors. Psychoses with this type of symptoms are called true or process schizophrenias. The existence of schizophrenic types of mental disintegration is recognized, however, as occurring in many other cases who are thought not to be particularly liable by virtue of constitution to true schizophrenia. These latter cases are grouped together as the so-called atypical or reaction schizophrenias or 'schizophreniform' psychoses. A few quotations may illustrate the beliefs held by this school.

Strauss (1931) describes the process symptoms thus:

"The cardinal pathognomonic indication of this process is the subjective experiencing of an awareness of his illness by the patient as a change in himself, as a threat to his ego and its unity, as an experienced withdrawal of something from his personality, as a conscious disintegration of individuality and as a diminished sense of personal activity. The general frame of mind is therefore one of doubt, anxiety and perplexity accompanied by weird feelings of approaching dissolution. Pathognomonic of this group are also purely physical sensations experienced by the patient—peculiar and often bizarre paraesthesiae such as feeling that one half of the body has expanded or shrunken, that the genitals are being tampered with, that the forehead is made of glass, and so on. Sometimes these sensations make their appearance before the general sense of menace and approaching disintegration makes itself felt at the psychic level. Symptoms of this kind are not in themselves referable to anything occurring at the psychological level, the more clear-cut and simple the more pathognomonic they are of schizophrenic process."

Langfeldt (1937) says:

"Whatever it may be which renders possible the exciting of the latent schizophrenia, whether endocrine, vegetative, autointoxications (teeth, tonsils, intestines, etc.) or exogenic intoxications and infections, it is probable that both the onset and the further development depend not only on the qualitative and quantitative relationship between genes and noxes, but also in a high degree on the manner in which the individual organism tolerates the various exogenic factors. In this connection a number of humoral biological circumstances probably intervene. . . .

"Among the isolated symptoms in acute process psychosis Mauz especially found *autochthonous ideas* (a sign of passivity), acts of the will and impulses, remoteness from reality, ideas of influence and schizophrenic confusion of thought, but the author expressly calls attention to the fact that these individual symptoms scarcely play any noteworthy prognostic role *by themselves* if they cannot be deflected by the actual fundamental symptom: the experience of the change as such. The process symptom is regarded as a palpable sign of a malady of an organic character, and this is often revealed at an early stage by a number of physical paraesthesiae and nervous irradiations which should

therefore be followed as being prognostically important. The organic character of the symptom also emerges from the fact that it cannot be deflected and is not comprehensible psychologically. The symptom is there isolated and *plain*. The clearer and plainer the symptom is, the more process-organic it is. It has less process-character if it is encased in acute confusion, ecstasy and psychic reactivity.

" According to Mauz the process-character signifies nothing more than that the complaint *tends* in the direction of schizophrenic deterioration. How far such deterioration occurs Mauz has now found to be dependent, *inter alia*, on the age at which the psychosis commences and the bodily form of the particular individual. The process may develop as a schizophrenic catastrophe or in attacks (schub)."

Again, remarking on the atypical " schizophreniform " mental diseases, Langfeldt says :

"Analyses show that in the majority of cases one or more of the following pathogenetic or pathoplastic (or both in union) factors can be demonstrated :

" (1) *Hereditary conditioned junction* with manic-depressive insanity . . . expressing itself by depressive or manic features in the symptomatology.

" (2) *Psychogenic factors* (particularly in a feeling of inferiority as an origin of self-reference and conflict-accentuated absorption in sexual questions . . .).

" (3) *Exogenic factors* (abuse of alcohol, septic angina, toxicosis, overstrain, childbirth . . .).

" Of the 17 cured cases out of the 100 in his katamnesic follow up, 11 presented an *atypical schizophreniform symptomatology marked by strong admixtures of manic-depressive, psychogenic* (*self-reference tendencies*) *and symptomatic* (*cloudiness, incoherence*) *trends and pathoplastic symptoms*, in contrast to the process psychoses in which the acute mental symptomatology is entirely dominated by process symptoms (massive primary persecution ideas, sensations of influence, depersonalization and derealization, massive katatonic-stuporous symptoms)."

The psycho-biological school is founded mainly on the teachings of Adolf Meyer. It stresses the reaction of the individual as a combined psychological and biological entity. He does not consider schizophrenia as of purely organic origin, but as the result of the interaction of the person's combined psycho-biological make-up with his environment. The essence of this view is expressed in Henderson and Gillespie's *Textbook of Psychiatry* (1936), in the following passage : " Schizophrenia is not a disease but a congeries of individual types of reaction having certain general similarities. While recognizing that the individual may be loaded in various ways—by inheritance, by physical defects of an endocrine disorder or some grosser kind, by intellectual deficiency or what not—none of these is in itself a sufficient cause for schizophrenia."

It is only when the subject has to battle with life's problems that reactions appear which cumulatively lead to one of the conditions included under schizo-

phrenia. Meyer concluded that "schizophrenia is the end result of an accumulation of faulty habits of reaction." This school therefore particularly stresses the prepsychotic personality and the ability of the individual to deal with life's problems in a direct and confident way. Consequently little attention is paid to the question of pure endogenous process symptoms, classification being made only according to the symptoms of the acute stage.

From the foregoing description it should be easy to see how the criteria of diagnosis vary, and how certain cases that might be considered true schizophrenics by some authorities would not be so by others.

(b) *Remission Rates in Cases Treated by the Usual Routine Hospital Methods, other than Cardiazol, Insulin or Prolonged Narcosis.*

There has been a great deal of loose talk about the word "remission" and its implications. It is quite a favourite habit among cardiazol and insulin therapeutists, in comparing their results with those obtained by other methods of hospital treatment, to make the statement that "so-and-so gives a remission rate of 50 per cent. or 20 per cent.," or whatever the figure may be, with no further details. Reference to the Oxford Dictionary (1934) gives the following definition of the word "remission": "Diminution of force, effect, degree, violence, etc.: the act of remitting." (Remit, v. = "abate, slacken, partly or entirely to cease from or cease".) The difference of interpretation is contained in what degree of improvement or abatement is implied by the authors concerned. Some would appear to talk of the term "remission" as applying to all cases whose course is arrested before progressing to ultimate dementia; others would appear to apply it only to those who make sufficient improvement to attain their discharge; and others again seem to confine the term almost exclusively to the cases which recover sufficiently to carry on in their original employment and environment, although many of these are admitted not to have attained complete recovery. Some authors consider that no case of true schizophrenia ever recovers; others find a high rate of complete recovery. In this respect it is interesting to note Bleuler's ideas on the subject:

"*This disease may come to a standstill at every stage and many of the symptoms may clear up very much or altogether; but if it progresses, it leads to a dementia of a definite character.*" And again, "The disease at times runs a chronic course, at times in shifts; it may become stationary at any stage or may regress a certain distance, but probably does not permit of a complete *restitutio ad integrum*."

The reason for these discrepancies is to be found in the fact that there are no commonly recognized definitions of the various gradings of improvement. We shall see, when reviewing the literature, the use of such terms as "recovery," "complete recovery," "social recovery," "recovery with deficit," "much improved," "improved," etc., varying in number and meaning from one

article to another. Combine with the above inconsistencies in diagnosing the disease and estimating the remissions the fact that there is comparatively little effort to assess the prognostic factors in the cases dealt with, and the reasons for variations in statistical results are patent.

There is one other point of importance that must be borne in mind when considering remission rates, namely, the type of hospital from which the figures originate. In this country we have two separate hospital systems, one for rate-aided patients and one for paying patients. For the former we have the county and borough mental hospitals, which in the past took certified patients only and which, despite the advent of voluntary patients, still take much the same type of patients from the point of view of prognosis. Connected with these are the mental observation wards in the corresponding county or borough general hospitals, which act as centres of distribution. Apart from the county hospitals most of the general voluntary hospitals have out-patient departments or clinics for psychotic patients, but very few have in-patient beds available.

On the Continent each university has attached to it what is known as the University Clinic—a self-functioning psychiatric unit with both in- and out-patients' departments. Each clinic corresponds more closely to the Maudsley Hospital than to anything else in this country and it is obvious that the material of these clinics will be much better as regards immediate prognosis than that received in one of the State mental hospitals.

In the United States of America clinics usually resemble the continental system. Some of them exist as part of a large hospital, not particularly associated with a University; and others in definite relationship with a University. There are also private mental hospitals for the paying patients.

B. Statistics of Remission Rates in Cases Treated by Methods other than Cardiazol, Insulin or Prolonged Narcosis.

One of the favourite methods of reaching conclusions in this respect is to represent figures of various authors in combination in tabular form. Tables I, II and III represent efforts in this respect by Strecker (1938), Hunt, Fieldman and Fiero (1938) and Jorgen Ravn (1934). It is my intention briefly to survey the articles from which these figures were taken and then to go on to individual articles not included in these tables.

1. The two series of figures quoted from Lemke occur in his article on the value of encephalography as an aid to progress in schizophrenia.

The first is a katamnesic follow-up in 1935 of 255 cases admitted to Jena University Clinic in the years 1918 to 1923 inclusive. This was effected by means of a questionnaire. Only 126 cases were traced. In these he found the following results:

TABLE I.—*Spontaneous Remission Figures in Schizophrenia* (*Strecker*, 1938).

Author.	When published.	Cases. Total.	Cases. Traced.	At home. Well or improved.	At home. Not improved.	At mental hospital.	Died.	Period under review.
1. Lemke	1935	132		48	14	29	9	1933/35
2. Faurbye	1936	72		42% more or less recovered			..	1935
3. Mayer-Gross	1929	328	294	35	3·4	19	42·5	1912/13
1. Lemke	1935	255	126	34	19	27	20	1918/23
4. Otto-Martiensen	1921	527	312	33·7	7·4	21·1	31·4	?
5. Otha	1936	?	179	29% complete remission			..	?
6. Dussik	1936	94		20% complete remission			..	?
7. Arnesen	1937	815	772	18·5% recovered			..	1915/28
8. Menzies	1935	17		5·9% recovered			..	1928/30
9. Stearne	1912	? 315		5	4·5	64·1	23·8	?
10. Ederle	1937	147		3–4% complete remission			..	1935
Total		2,460		23·6%				

FIG. 1.

At home and employed	43 = 34%
At home, unimproved	24 = 19%
In mental institutions	35 = 27%
Dead	24 = 19%

In the second series he has traced 132 cases admitted to the same clinic during the two years prior to his article (written in 1935). His results were as follows:

TABLE II.—*After Hunt, Fieldman and Fiero* (1938).

TABLE IIA.—*Recovery Rates, from the Literature.*

Author.	Number of cases.	Number recovered.	Per cent. recovered.
9. Stearne (1912)	395	51	13
11. Rosanoff (1914)	213	25	11
12. Bond (1921)	20	0	0
13. Bond (1921)	34	3	8·8
14. Pollock (1925)	19,927	?	6·4*
15. Strecker and Willey (1924)	186	38	20·4
16. Levin (1931)	592	35	5·9
17. Wootton *et al.* (1935)	95	18	20
18. Whitehead (1937)	90	14	15·5
19. Bond and Braceland (1937)	116	12	10·3
Total (excludes the figures of Pollock)	1,741	196	11·3

TABLE IIB.—*Amelioration Rates, from the Literature.*

Author.	Number of cases.	Number ameliorated.	Per cent. ameliorated.
Pfersdorff (quoted by Kraepelin)	150	23	15
20. Coles and Fuller (1909)	109	27	25
9. Stearne (1912)	395	95	24
11. Rosanoff (1914)	213	62	29
12. Bond (1921)	20	3	15
13. Bond (1921)	34	3	8·8
21. Williams and Potter (1921)	200	46	23
14. Pollock (1925)	19,927	?	40†
17. Wootton *et al.* (1935)	95	31	32·6
18. Whitehead (1937)	90	32	35·5
19. Bond and Braceland (1937)	116	37	31·9
Total (excludes Pollock's figures)	1,422	359	25·6

* Number discharged as recovered per 100 admissions during the same period.
† Number discharged as recovered or improved per 100 admissions during the same period.

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TABLE III.—*From Jorgen Ravn* (1934).

Author.	Date.	Diagnosis.	Cases.	Cured. %.	Cured with defect. %.	Unchanged. %.	Died. %.
Kraepelin	..	Catatonia	?	13	27	59	..
		Hebephrenia	?	8	17	75	..
E. Meyer	1903	Dementia praecox	46	30	..	..	..
,,	1909	,, ,,	142	21·8	19·1	69	..
Albrecht	1905	,, ,,	693	2	17	81	..
Kahlbaum	1902	Catatonia	27	30	15	55	..
Raecke	1910	,,	171	15·8	11·1	55·5	17·4
Schmidt	1911	Dementia praecox	455	16·2	15·5	57·9	10·2

FIG. 2.

Cured and employed	19 = 14%
At home and improved	45 = 34%
At home and not improved	18 = 14%
In mental institutions	38 = 29%
Dead	12 = 9%

2. Faurbye's (1936) figures appear in an article on "Some Statistics Concerning the Prognosis in Schizophrenia." The first part of the paper deals with the total number of schizophrenic patients in the mental hospital with reference to the percentage of beds they occupy and the proportion of the various subdivisions (catatonia, hebephrenia, etc.). The second part pays particular attention to recent cases. A follow-up was made in November, 1936, of such cases who were admitted to hospital at least a year previously. It is not clear for what length of time each case was followed up. It would appear that they were admitted somewhere between 1932 and 1935.

FIG. 3.

Diagnosis.	Dementia praecox simplex.	Dementia praecox katatonica.	Dementia paranoia.	Unascertained group.	Total.
Patients with new psychosis and admission of at least one year ago	31	21	15	5	72
Discharged total	16	11	8	5	40 (55·5%)
,, with remission	11	9	6	4	30 (41·7%)
,, without remission	5	2	2	1	10 (13·8%)
Readmitted	3	2	1	0	6

He presented his results in tabular form as above, and commented upon them thus:

"The 42 per cent. (i.e. discharged with remission) occupy an intermediary position, but the figure certainly will grow, as none of the patients had been in hospital so long that no remission could be expected. The figures are too small to enable us to calculate the percentage of the remissions in the respective clinical sub-groups, but the relatively greatest remission percentage seems to

lie—as others find it too—in the katatonic group; it appears that the best quality remissions are found in this group also—there are six of the remitted patients whom we considered better or practically better, and four of those are katatonics.

" Of the 72 patients admitted with recent schizophrenia at least a year ago, at present 39 are in hospital—32 have been here since their admission; 6 have been readmitted and 1, who had been discharged unchanged, is amongst the readmitted. The fate of these patients has not yet been decided upon. The end result—improvement or stationary—in most cases comes only after three to ten years. As the hospital is only four years old, such an investigation had not been made.

" With ' recovery,' ' social recovery ' was meant, i.e. the patient can return to society and appear well (often, it is true, under easier conditions than before), but in the majority of cases with some persistent signs of defect."

This article is frequently quoted with reference to the high percentage of recoveries, and it is therefore interesting to note what exactly the author means by " recovery."

3. Mayer-Gross (1929) published the results of following up 294 cases admitted to the Heidelberg Psychiatric Clinic in the years 1912 and 1913. They were followed up over ten years or more and a personal re-examination was made of each case at the time of the follow-up. The results are represented in the following table:

FIG. 4.

	Number.	Percentage.
At home recovered (i.e. employed and full social recovery)	89	32·4
At home improved (employed)	14	4·8
At home not employed and obviously ill . .	10	3·4
In mental hospitals	56	19
Dead	125	42·4

The importance of this article (and the reason which makes it probably the most often quoted of all) lies in (*a*) the large percentage of cases traced, (*b*) the length of time covered, and (*c*) the personal re-examination of cases by the author. Braatoy (1936) criticizes the lack of information as to how long the completely cured group had been out of the hospital (i.e. duration of psychosis before discharge, number of relapses, etc.), and this deficiency renders the picture incomplete.

4. The article from which Otto-Martiensen's (1921) figures are taken is written from a specialized point of view, being " A Katamnesic Investigation of 312 Cases of Schizophrenia with Special Reference to their having taken

part in the War." The latter fact brands the cases as having undergone an ordeal not common to the ordinary schizophrenic. Moreover, the 312 cases represent the only ones from whom an answer to a questionnaire sent to a series of 527 cases previously treated at the Jena Clinic was obtained (i.e. only 59 per cent.). The author pays particular attention to the question of readmission (see table below):

FIG. 5.

	Complete remissions.	Improved.
After one readmission only	1	52
After two or more readmissions	3	10
After transfer to another mental hospital	11	28
Total	15 (4·9%)	90 (28·8%)

At present in a mental hospital	21·1%
Dead	31·4%

5. The reference to Otha's (1937) figures is merely a passing one of two lines in an article by Roggenbau, quoting the bare facts that from 179 cases Otha had observed 52 (or 29 per cent.) with full remissions with no other details whatsoever.

6. Dussik (1936) states that out of 94 cases of schizophrenia (with psychosis of not more than six months' duration) treated at the Vienna Clinic in 1936 with methods other than insulin (and of course excluding cardiazol) 20·2 per cent. of complete remissions were obtained, whereas in cases treated with insulin under similar conditions, the complete remission rate was 70·7 per cent. The average duration of stay in hospital was in the former case 202 days and in the latter only 62.*

7. Arnesen (1937) (*British Medical Journal* extract, 1937) investigated the subsequent careers of 815 patients treated at the Gaustad Asylum in Norway over the period 1915 to 1929: 42 could not be traced, 143 had been discharged and were out of hospital, and 630 were dead or still in hospital. Thus, allowing for probable recoveries among the 42 not traced, 20 per cent. of patients had been discharged. Of the 143, 1 was discharged as well, 106 were discharged improved, and 36 discharged not improved.*

8. Menzies' (1935) figures (the only British figures quoted in Strecker's series) occur in an article entitled, "Pyrotherapy in Dementia Praecox," and refer to the remission rates during the three years 1928 to 1930 inclusive, used

* Original articles were unobtainable in this country.

as a control for a similar number of cases treated with pyrotherapy during the years 1932 to 1934 inclusive. Below is the table of results obtained:

FIG. 6.

	Number of cases.	
	1932–1934. Treated.	1928–1930. Untreated.
Recoveries	1	1
Partial remissions	2	..
Transferred	4	..
Died	1	2
Chronic	11	14
Total	19	17

No explanation is given as to what criteria are used for the grading, "recoveries," "partial remissions" and "chronic." The total number of cases is seen to be very small, and referring to this "untreated" group (i.e. not treated by pyrotherapy), the author remarks, "Most of these are still resident with all symptoms well established, so that the original diagnosis can hardly be doubted," which points to the cases being of a severe type. In these circumstances the quotation of a recovery percentage of 5·9 can hardly be considered of much significance.

9. Stearne, A. W. (1912), reported in 1912 on 395 cases admitted to Dasuvas State Hospital, U.S.A., during the years 1901 to 1905 inclusive. Of these, 315 were traced by questionnaire. It was found that of the 315, 187 had been discharged from hospital, their condition on discharge being given in Fig. 7.

FIG. 7.

	Male.	Female.	Total.	Percentage.
Not improved	42	50	92	47
Improved	8	36	44	23·5
Much improved	9	29	38	20
Capable of self-support	11	2	13	7
Total	70	117	187	47% of total number of cases.
Readmitted				44
Readmitted twice				9

In 1912 the distribution of traced cases was :

FIG. 8.

	Male.	Female.	Total.	Percentage.
Now in hospital for the insane	80	122	202	64·1
Dead	27	48	75	23·8
Boarding out	..	8	8	2·5
At home apparently well	8	8	16	5
At home demented	8	6	14	4·5
Total	123	192	315	

Of the 202 cases now in hospitals for the insane, 98, or 24 per cent., have had a continuous hospital residence. The large percentage of relapses among the cases discharged is obvious from a comparison of the two tables.

As regards the patients apparently well, the author states, " After analysis of the fairly well group, Dr. H. W. Mitchell, who was familiar with the patients themselves as well as their records, was of the opinion that they were not cases of dementia praecox, but were for the most part atypical depressions." It seems apparent, therefore, that the type of case being dealt with was severe, and in its course corresponded broadly to the old conception of the almost unfailing downhill progress of dementia praecox.

10. In Ederle's (1937) article again there is only a bald statement of the remission rate he found in 147 cases. A translation of this runs as follows : " The number of spontaneous remissions is given by Bumke as 22 per cent. It is doubtful whether these are really full remissions comparable with those obtained by insulin treatment. Only 3·7 per cent. of the 147 schizophrenics admitted to the Tübingen Clinic in 1935, and who were not treated with insulin, have been discharged as really full remissions." The reference to full remissions in this passage presumably means in the sense described by Müller as a criterion in insulin shock. No other details of the cases are given.

11. Rosanoff (1914) followed up all cases of past admission to King's Park State Hospital for the year ending September 30, 1908, and determined their condition five years later. His findings are revealed in the following statistics taken from his article. It is to be noted that the cases were divided into the " Dementia Praecox group " and " Conditions allied to Dementia Praecox group."

FIG. 9.—*Subsequent Fate of Admissions.*

	Cases admitted.			Repatriated and deported.		Died.		Discharged.		In hospital.	
	M.	F.	T.	Number	Percentage.	Number.	Percentage.	Number.	Percentage.	Number.	Percentage
D.P. group	92	77	169	8	2·2	23	13·6	39	23·1	99	58·6
Allied conditions	34	19	53	1	1·9	4	7·5	31	58·5	17	32·1

FIG. 10.—*Conditions at Time of Discharge.*

	Total number of cases.		Recovered.		Improved.		Unimproved.	
	Admitted.	Discharged.	Number.	Percentage.	Number.	Percentage.	Number.	Percentage.
D.P. group	169	39	..	..	32	18·9	7	4·1
Allied conditions	53	31	25	47·2	5	9·4	1	1·9

FIG. 11.—*Subsequent Course of the Discharged Cases.*

	Total.	Number discharged.	Readmitted, now in hospital.		Readmitted, eventually discharged.		Not known to have been readmitted.	
			Number.	Percentage.	Number.	Percentage.	Number.	Percentage.
D.P. group	169	39	10	25·6	1	2·6	28	71·8
Allied conditions	53	31	2	6·5	3	9·7	26	83·8
Total	222	70	12	17·1	4	5·7	54	77·1

Rosanoff comments upon the "allied" group thus: "Nearly half of the patients in this group allied to dementia praecox have been discharged as recovered, many of these being placed in this group instead of straight dementia praecox for no other reason than that of their eventual recovery. Moreover, a percentage of these patients higher than average find their place at the end of five years under the heading 'not known to have been readmitted'."

12. Bond's article (1921) is entitled "A Review of the Five-year Period following Admission in 111 Mental Patients." He traced out the histories of all the 111 female patients admitted to the Department for Mental and Nervous Diseases of the Pennsylvania Hospital (a private hospital) in the year 1914 for five subsequent years. Of the twenty cases of dementia praecox in the group all remained continuously in hospital except one, who remained outside, improved, but with no insight and retaining her delusions. We see that the three cases quoted in Table IIB as ameliorated had not left hospital. Bond also gives summaries of the histories of twenty unclassified cases. As many as fifteen of these might well fit into the modern conception of schizophrenia, and of these six recovered; one remained at home improved, and one at home not improved; six were still in a mental hospital and one had died. If these cases are included, we see that a different picture is presented, namely, 17·1 per cent. recovery, 11·4 per cent. improved, 5·7 per cent. at home not improved, and 71·4 per cent. continuously in hospital.

13. The above findings are substantiated in Bond's second article (1921): "Results in 251 Cases Five Years after Admission to a Hospital for Mental Diseases." In this article he has followed up 251 consecutive admissions (again females) to the Pennsylvania Hospital for the five years following. It appears that Hunt, Fieldman and Fiero have made a misquotation in their table, as Bond's figures are:

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FIG. 12.

	Number.	Recovered.	Recovered minus.	Died.	Unimproved.
Dementia praecox	47	1	9	3	34
Unclassified	44	14	17	5	8
Total	91	15	26	8	42

The figures of the unclassified group are again quoted because of the possibility that some cases are included which would nowadays be considered as schizophrenia.

Bond does not define "recovered," but regarding the recovery minus group he says, "they show as striking a tendency to improve (i.e. as do the "recovery" group) but are as strikingly differentiated by coming to a partial or poorly maintained adjustment."

14. Pollock (1925) described the findings of a special census of mental hospitals by the Federal Census Bureau. The census covered the number of first admissions, readmissions, discharges and deaths during the calendar year 1922 and the total number resident on January 1, 1923, in all hospitals and institutions treating mental disorders. His findings regarding dementia praecox are shown in Figs. 13, 14 and 15. The total number of dementia praecox patients resident on January 1, 1923, in such places was 60,153 males and 53,587 females, a total of 114,240.

FIG. 13.—*The Movement of Patients in Hospitals for Mental Diseases, 1922, by Psychosis and Sex.*

Psychosis.	1st admissions.			Readmissions.			Discharges.			Deaths.		
	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.
Dementia praecox	8,950	6,576	15,526	2,479	1,922	4,401	6,785	4,659	11,444	1,930	2,018	3,948

FIG. 14.—*Rates per* 100 *Admissions with the Same Psychosis of Patients Discharged from Hospitals for Mental Diseases during* 1922, *Classified by Sex and Condition on Discharge.*

Psychosis.	Total percentage discharged.			Percentage recovered.			Percentage improved.			Percentage not improved.		
	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.
Dementia praecox	59·4	54·8	57·4	6·3	6·6	6·4	33·8	33·3	33·6	17·6	13·7	16·0

FIG. 15.—*Percentage Distribution of Patients Discharged as Recovered or Improved from Hospitals for Mental Diseases during* 1922, *by Psychosis and Length of Hospital Residence.*

Psychosis.	Condition on discharge.	Total.	Under 4 months.	4–6 months.	7–11 months.	1 year.	2 years.	3 years.	4 years.	5 years or over.
Dementia praecox	Recovered	100	28·8	22·1	17·0	15·0	6·0	3·0	1·6	6·4
	Improved	100	30·7	16·2	15·5	16·8	6·8	4·0	2·3	7·7

Recovery he defines as "the condition of a patient who has regained his normal health so that he may be considered to have practically the same mental status as he had previous to the onset of his psychosis." After tabulating the results according to the findings in the various States, he says: "Some States seem to have adopted a conservative policy in regard to discharging patients as recovered; their recovery rates, therefore, are out of line as compared with those of most of the other States. As would be expected, many States that have low recovery rates have relatively high improvement rates."

The large number of cases dealt with in this article make it of particular interest.

15. The figures compiled by Strecker and Willey are taken from an article on "prognosis in schizophrenia," which will be referred to in more detail later. They found that of 186 consecutive female admissions to Pennsylvania Hospital for Mental and Nervous Diseases, 38 recovered, and 148 improved, remained stationary, or deteriorated. The average symptom-free period for the recovered cases is five years, and therefore no relapses are reported.

16. Wootton and Armstrong (1935) published a follow-up study of cases of dementia praecox admitted during the years 1928 to 1931 inclusive to St. Ebba's Hospital, Epsom, which at that time was taking certified cases only. Their results, of the dementia praecox group, are represented in tabular form thus:

FIG. 16.

Year.	Number admitted.	Number discharged.	W.	S.	T.	R.	I.	U.
1928	36	13	6	1	..	2	2	2
1929	28	18	7	..	1	3	3	4
1930	21	7	3	..	..	2	2	..
1931	19	9	2	..	2	2	..	3
Total	104	47	18	1	3	9	7	9

W. = Completely well since discharge.
S. = Has remained well in sheltered environment.
T. = Minor relapses without mental hospital treatment.
R. = One or more major relapses in a mental hospital.
I. = Certified insane at inquiry.
U. = Unchanged.

These figures are significant in that they consider not only the rate of discharge, but the fate of the discharged cases during the following years. The large number of relapses is interesting. The authors comment on the period after discharge at which these tend to occur: "The same tendency to relapse at the end of a year exists in the dementia praecox group (i.e. as in the manic-depressive group), but these cases seem to suffer another danger period towards the end of two years." The authors are unable to provide any explanation for this, and the suggestion entailed is one which requires confirmation by a considerably larger number of cases.

17. In Duncan Whitehead's article on "Prognosis in Schizophrenia" (1937), he traces up the subsequent histories of 90 cases of dementia praecox admitted to the Utica State Hospital in 1935–1936, and analyses them from the point of view of duration of psychosis and clinical subtype of the cases. He represents his findings in tabular form (Figs. 17 and 18):

FIG. 17.

Duration of psychosis.	Recovered.		Much improved.		Improved.		Unimproved.	
	Total.	Percentage.	Total.	Percentage.	Total.	Percentage.	Total.	Percentage.
Less than 6 months	8	22	1	3	7	25	18	50
6 to 18 months	0	..	3	23	2	15	8	62
Over 18 months	0	..	0	..	9	23	29	77
Total	8	..	4	..	18	..	55	..

FIG. 18.

Total.	Type of psychosis.	Recovered.		Much improved.		Improved.		Unimproved.	
		Total.	Percentage.	Total.	Percentage.	Total.	Percentage.	Total.	Percentage.
88	All types of dementia praecox combined	8	9	6	7	18	20	56	62
48	Hebephrenic type	4	8	3	6	8	16	33	67
25	Paranoid type	0	..	2	8	5	19	18	69

Regarding catatonic and simple types, the total number of cases here was too small to be of value for statistical purposes.

18. In Bond and Braceland's article (1937) entitled "Prognosis in Mental Diseases," they publish the result of five-year follow-up studies on 710 consecutive admissions to Pennsylvania Hospital (a private hospital). Of these, 116 were cases of dementia praecox, and their condition at the end of five years was as follows:

FIG. 19.

Total number.	Recovered.		Improved.		Not improved.		Died.	
	Number.	Percentage.	Number.	Percentage.	Number.	Percentage.	Number.	Percentage.
116	12	10·3	37	31·7	57	49·1	10	8·69

No definition of recovery is given.

The authors state: "These percentages may be increased if to the cases diagnosed dementia praecox there are added those which at the time of admission had symptoms which strongly suggested the diagnosis. In the manic-depressive group there are 7 of these, in the unclassed group 16, and in the paranoid group 5, making a total of 28. Of these, 17 recovered, 3 improved, 3 were unimproved and 3 were lost. By combining these cases of suggested dementia praecox with those which seem fully to warrant the diagnosis, the percentage of full recoveries is 20 per cent. and of recovery and improvement is 40 per cent."

A further very significant comment is made in this paper on the apparent differences in the criteria of diagnosis in such countries as Switzerland. A report quoted regarding the Burghölzli Hospital gives the following statistics for 1936 : All admissions were 990, of which 11 were manic-depressive and 375 schizophrenia, and the deduction is made that the diagnostic criteria are so different in Switzerland (and ? Vienna) from those in the United States that due allowances must be made.

19. Meyer, E. (1903) followed up 46 cases of definite catatonia who had presented themselves at the Tübingen Psychiatric Clinic. He found that 14 (i.e. 30·4 per cent.) of these cases had " a favourable outcome," 11 (23 per cent.) were cured with defect, and 21 (45 per cent.) had an " absolutely unfavourable " course. With regard to specific factors, he mentions acute onset, early stupor and slow disappearance as favourable. It is not clear for how long each case was followed up, and for how long cases with a favourable outcome or cured with defect were in the clinic or back at home. Regarding the implications under the group, " a favourable outcome," Kraepelin remarks, " Meyer evidently does not make the very strictest claims."

20. Albrecht (1905) investigated the histories of the 693 cases admitted to the Provincial Institution between April 1, 1900, and April 1, 1904, inclusive. Of these, 202 were cases of dementia praecox. He found " cures " in only 4 (2 per cent.) of cases and " cure with defect " in only 32 (17 per cent.), moderate dementia in 93 (48 per cent.) and severe dementia in 63 (33 per cent.) cases. He follows with observations of rather doubtful value on such factors as heredity, exogenous factors, age of onset, etc. The duration for which each had been ill, cured, relapsed, etc., is not mentioned.

21. Kahlbaum (1902) reported the results of investigating the histories of 27 patients admitted to the Frankfurt Mental Hospital some years previously suffering from catatonia. He found that 9 (33 per cent.) of them had been completely cured, 7 (25 per cent.) had incomplete cures, and 11 (42 per cent.) had not improved or had become worse ; but he adds later that the " ultimate outcome " is unfavourable in about 70 per cent. of the cases. By " cure " is meant " no mental defects of any kind : ability to go about their business just as before ; no signs of stereotypy and nothing that attracts particular notice to them as different from other people." In cases of " incomplete cure " there is ability to work to a certain extent, but affected behaviour, irritability and a tendency to temporary states of stupor and stereotypy remain. Nothing is said regarding the duration of the psychosis before admission, or the duration of hospital residence in cases eventually discharged.

22. Raecke (1910) made inquiries in the spring of 1908 regarding the histories of 200 cases of catatonia admitted to the Kiel University Clinic for

Neurology and Psychiatry between November, 1901, and December, 1905. It was only possible to obtain useful reports from the relatives of 171 cases. No personal examination was made, for the stated reason that it was not intended to discuss the unprofitable question of the possibility of a cure in the strict scientific sense. A " cure in the practical sense " was accepted if the relatives considered that the patient was " restored to health," that is, if the patient gave laymen the impression that he had recovered, if he followed his profession in the same way as before, if he did not complain of any disturbances and if he no longer appeared strange in any way.

The term " improvement " was used if it was reported that the patient was not quite the same as before, that he had less energy, was more irritable or generally nervous, but that he was no longer mentally disturbed.

On this basis the author found that 27 patients (15·8 per cent.) could be said to have attained a practical cure, 19 (11·1 per cent.) " improvement," and the remaining 125 (73·1 per cent.) to be uncured. Of the latter, 30 had died, 86 were still living in institutions, and 9 were being looked after at home.

The author goes into the question of the relationship of heredity, age and symptoms to prognosis, but the question of duration of psychosis and the time the patients were in hospital or in the outside world is not dealt with in any detail.

23. Schmidt, H. (1911), collected the subsequent histories of 455 cases of dementia praecox admitted to the Waadt Mental Hospital during the ten years previous to his investigation. He found cures in 16·2 per cent. of cases, cure with defect in 15·5 per cent. and dementia in 57·9 per cent. The criterion of cured cases is not so strict as some, since he does not rule out cases in whom such minor symptoms as irritability, tendency to tire frequently, etc., are still present. He examined 68 of the " cured " cases himself. He notes that some of the cases with a catatonic aspect showed similarity to pictures of acute confusion, and that it was remarkable how often the latter syndrome was present in cured cases, and how seldom in those not cured.

24. Meyer, E. (1909), in a further article on the prognosis in schizophrenia, followed up 170 cases admitted to the Königsberg Clinic from 1904 to 1906. He found that 13 (= 7·6 per cent.) of these cases had " recovered with defect " and 14 (= 8·2 per cent.) had improved. By recovery with defect was meant that " these cases support themselves wholly or in part, but show some mental abnormalities or have had to change their occupation. The ' improved ' are still capable of earning something, but are mentally diseased even in the eyes of the layman."

The works discussed henceforth have not been included in Tables I, II and III, or in any other such table to the best of my knowledge. Each is discussed on its individual merits.

25. Braatoy, T. (1936), published an article on " The Prognosis in Schizophrenia with Some Remarks Regarding Diagnosis and Therapy." He commences with a preliminary discourse on the difficulties encountered in diagnosis, and the poverty of literature on the factors governing prognosis in schizophrenia. He then declares himself fully aware of the various shortcomings of the katamnesic follow-up by the questionnaire method, but despite these shortcomings, considers it worth while publishing the results of such a follow-up by himself on 208 cases with " certain " and 90 with uncertain schizophrenia admitted to the University Psychiatric Clinic, Vinderen, Oslo, during the three-year period September, 1926, to August, 1929. The follow-up lasted from autumn, 1932 to February, 1935. The conditions of the patients at the end of this time are summarized by the author thus :

FIG. 20.

	Certain schizophrenics.		Uncertain schizophrenics.	
	Male.	Female.	Male.	Female.
Died	11	4	6	2
In institutions	48	49	20	10
In private care	14	20	8	6
Improved	9	13	6	5
Recovered	21	19	14	13
Total	103	105	54	36

Particular emphasis is placed on the tendency of remissions to relapse and on the importance of prognostic assessment of the possible duration of each remission. He gives the following definitions :

" Recovered = the patients registered as such are those regarding whom we have received statements to the effect that they are just as well and at full work.

" Improved = comprises the patients who are half or entirely at work, but about whom the report contains hesitations of one kind or another.

" In private care comprises patients who are practically unfit for work but who can be taken care of outside an institution, whether at home or in special colonies.

" In mental hospitals means in one of those at the time of the follow-up."

The fate of cases subsequent to admission he gives in a graph, but it only deals with the total time in or out of the mental hospital, and the author states that no attempt has been made to give expression on the graph (or in numbers) to short remissions within the period of five years involved in the investigation.

26. Langfeldt (1937) produced in a paper sufficiently lengthy to be published as a special supplement to the *Acta Psychiatrica et Neurologica* the results of a katamnesic follow-up of 100 cases of schizophrenia. These cases had been admitted to the University Psychiatric Clinic, Vinderen, during the years 1926 to 1929 inclusive, and their condition had been ascertained by personal re-examination by the author in 1936 (at periods varying from one case to another from six to ten years following admission). Of these 100 cases, 90 were cases of unmistakable process schizophrenia and 10 were cases of atypical schizophrenia (in the senses we have already seen—pp. 381–383), included for comparative purposes. The condition of the cases at the time of the investigation he summarized in the following table :

FIG. 21.—*Clinical Conditions of Patients and their Places of Residence in* 1936.

	Total.		Completely cured.		Cured with defects.		Improved.		Unimproved.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
In institutions . .	22	24	..	..	..	..	1	1	21	23
In private care . .	10	15	..	..	..	..	2	5	8	10
At home . . .	14	15	9	8	2	2	1	3	2	2
Total . . .	46	54	9	8	2	2	4	9	31	35

All of the 66 per cent. of uncured, 13 per cent. of improved and 4 per cent. of cured with defect were true schizophrenics, but of the 17 per cent. of complete cures 14 were found to be cases of atypical schizophrenia (i.e. the 10 cases deliberately included plus another 4 allotted to this group after reconsideration), leaving only 3 per cent. of " process " schizophrenias in this category. " Completely cured " cases are defined as those who have responded in a normal fashion to the all-round psychologico-psychiatrical examination by the author ; " partially cured " are those who, although retaining a few symptoms, have adjusted themselves to these changes in their own worlds ; " improved " are those cases more or less cured, and " uncured " are all the rest.

27. Fromenty (1937) wrote an important paper entitled " Les rémissions dans la schizophrënie—Statistiques sur leur fréquence et leur durée avant l'insulin thërapie." The material consists of cases admitted to the department for mental diseases at the Tours General Hospital. 271 cases were carefully selected, the author pointing out that all cases in the following categories were eliminated in order that no doubtful cases should be included :

(1) All schizophrenics in whom the first manifestations had not been observed (e.g. immigrants, transfers from another hospital, or cases who had previously been in a mental hospital).

(2) Cases carrying the recognized diagnosis of " délire des dégénérés," although according to G. Heuyer and Dublineau attacks of dementia praecox arise quite frequently in this group.

(3) Puerperal psychosis cases who have turned into dementia praecox and, on the other hand, puerperal cases who, having had a variable number of remissions, had had the most recent attack preceded by pregnancy.

(4) Cases of chronic hallucinatory psychosis, or progressive hallucinatory deliria, which German authorities consider as late cases of schizophrenia with comparatively little downhill progress.

The chief interest in this work consists in accurate information of histories subsequent to discharge with special reference to the duration of first attack, remissions, subsequent attacks, and tables revealing the details of each of these are given (Figs. 22 and 23). Unfortunately it is not stated what is meant by "remission" (i.e. whether recovered or merely improved to varying degrees).

FIG. 22.—*Numerical Results.*

Category according to subsequent histories.	M.	F.	Total.	Percentage.
Number of cases	127	144	271	..
1. Schizophrenics having progressively deteriorated from the first	87	103	190	70
2. Schizophrenics having deteriorated after a variable number of remissions	20	20	40	15
3. Complete and durable remissions after a varying number of schizophrenic attacks and cures	20	21	41	16

FIG. 23.—*Summarizing Table of the Number and Duration of Remissions.*

A. In 2nd Category (i.e. above, Fig. 22).

Number of remissions.	Under 6 months.	6–12 months.	1–2 years.	2–3 years.	3–5 years.	5–10 years.	10–15 years.
1st	6	4	9	3	9	4	3
2nd	3	..	4	1	1	1	..
3rd	3	..	1	..	..	..	..
4th	3	..	..	..	..	..	..
5th	1	..	..	..	..	..	..

B. In 3rd Category.

1st	1	5	10	7	13	7	..
2nd	..	2	1	2	..	..	..
3rd	..	1	..	..	..	..	..

No prognostic findings or remarks are mentioned, other than that the hebephrenic type is less liable to remissions than other types.

28. In their survey of cases of dementia praecox discharged from the Psychiatric Institute and Hospital, Horwitz and Kleinman (1936) dealt with cases discharged from there between January, 1930, and January, 1933, inclusive. Of the 193 such cases 23 were untraceable, but the other 170 were followed up and their condition in August, 1935, determined. Of the 170 cases discharged before 1933, 124 had been rehospitalized in August, 1935. Seven of these were dead, 77 were still in mental hospitals unimproved, 30 were improved (12 in hospital still and 18 discharged), and 10 were discharged not improved. Of the remaining 46 who had remained continuously out of hospital, 1 was dead, 14 unimproved, 22 improved (10 improved and 12 much improved) and 9 recovered.

FIG. 24.—*Summarizing Table.*

Condition on discharge.	Number of cases.	Present condition. Recovered.	Much improved.	Improved.	Unimproved.	Dead.
Recovered	5	3	1	..	1	..
Much improved	10	..	5	1	4	..
Improved	50	6	7	10	26	1
Unimproved	105	..	16	12	70	7
Total	170	9	29	23	101	8

The exact meaning implied by the gradings, recovered, much improved, improved, unimproved, was not given.

The authors also endeavoured to determine any prognostically favourable factors, and state: "In comparing the group that required re-hospitalization with the non-re-hospitalized group to find what factors made for continuous adjustment in one and subsequent re-hospitalization in the other, we find that the mode of onset, age on admission, institution, family background, social work done and pre-psychotic personality showed no significant differences in the two groups.

29. R. G. Fuller (1935) followed up 947 cases discharged from the New York State Hospital ten years prior to the investigation, and published his findings in an article called "What Happens to Mental Patients after Discharge from Hospital?" Of the 947 cases traced, 242 were cases of dementia praecox, and their position at the end of the ten years was as follows:

FIG. 25.—*Dementia Praecox 242 Cases.*

	Percentages.		
	Male.	Female.	Total.
In the community after ten years . .	40·3	46·4	43·8
In a mental hospital after ten years . .	47·1	40·6	43·3
Died in the ten years' period . . .	12·5	13·0	12·8
In the community continuously . .	29·8	41·3	36·4
Readmitted to a mental hospital . .	61·8	50·7	85·8

" In the community after ten years " includes patients in the community at the time of the study who had been in a mental hospital at some time within the ten years. Unfortunately there is no indication of how many times each of these cases had been readmitted, or for how long. " In a mental hospital after ten years " refers to any mental hospital, not necessarily to a civil State hospital. " Readmitted to a mental hospital " means that the patient was either in a mental hospital at the time of the study, or had been in a mental hospital one or more times within the period of ten years.

30. Hunt, Fieldman and Fiero (1938), in an article entitled " Spontaneous Remissions in Dementia Praecox," deal with the subsequent fate of 641 consecutive admissions to the Rochester State Hospital, U.S.A., between July, 1927, and June, 1934, paying particular attention to such factors as sub-type of the disease, duration of psychosis before admission, time spent in hospital, number of relapses, etc. They classify their results into three grades—much improved, improved, and unimproved—and justify themselves thus: " All cases showing significant remissions were classified as either much improved or improved. No attempt was made to separate recoveries from the much improved group—a difficult task at the best (Lewis and Blanchard, 1931). Furthermore, in our hospital the designation ' recovered ' was almost never applied to a case of dementia praecox during the period of this study. Our " much improved " group contains all cases showing a disappearance of all active psychotic manifestations, and returning to a substantially normal life in the community with or without scarring of the personality and with or without good insight. The ' improved ' group contains all those who showed enough improvement of conduct to warrant release from hospital, but fell short of being much improved because of residual psychotic trends or conduct, or because of such severe personality scarring as to require a definitely sheltered environment. All other cases were considered unimproved."

Fig. 26 shows their results in tabular form according to sub-type of manifestations and duration of psychosis expressed in percentages.

Fig. 27 shows the number of relapses.

FIG. 26.

	Total number.	1–5 months. No.	M.I.	I.	U.I.	6–18 months. No.	M.I.	I.	U.I.	Over 18 months. No.	M.I.	I.	U.I.	Total. No.	M.I.	I.	U.I.
Catatonics	111	54	48·2	14·8	37	29	47·5	10·5	42·0	28	25	10·7	64·3	111	41·6	12·7	45·5
Hebephrenics	151	38	39·5	26·3	34·7	38	29·0	10·5	60·5	75	4·0	22·7	73·3	151	19·2	20·5	60·3
Paranoids	218	29	24·1	24·2	51·7	50	10·0	22·0	68·0	139	7·9	17·3	74·8	218	10·5	19·3	78·2
Unclassified	161	38	23·6	13·1	63·3	41	17·3	17·7	75·6	82	13·4	7·3	79·3	161	14·3	11·2	74·5

Because there were only 10 cases of simple schizophrenia, their results were not tabulated.

FIG. 27.—*Relapses.*

Condition on discharge.	Number of cases.	Relapse percentages. No relapses.	Temporary relapse.	Permanent relapse.	Not traced.
Much improved	118	56·8	12·7	12·7	17·8
Improved	107	41·1	12·2	31·8	14·9
Total	225	49·4	12·4	21·8	16·4

In the temporary relapse group the relapse came on after an average length of remission of 22 months; 10 of the 28 patients had two or more relapses.

FIG. 28.

Sub-type.	Number of cases.	A. Rec.	M.I.	Imp.	Unimp.	B. Rec.	M.I.	Imp.	Unimp.	Hosp.
Simple	24	4·2	41·7	37·5	16·7	8·3	29·2	8·3	4·2	50·0
Hebephrenic	206	6·3	25·7	20·9	46·1	1·0	7·8	6·8	14·1	68·4
Catatonic	356	17·4	25·6	27·0	29·5	7·9	13·2	6·2	3·9	61·4
Paranoid	448	12·7	28·1	25·7	31·5	·7	10·2	8·5	7·3	68·3
Unclassified	5	20·0	40·0	0	40·0	20.0	..	20·0	30·0	40·0
Total	1,039	12·9	27·1	25·3	33·4	3·5	11·2	7·4	7·5	68·8

A. = Insulin-treated group.
B. = Non-insulin-treated group.

Rec. = Recoveries.
M.I. = Much improved.
Imp. = Improved.
Unimp. = Unimproved.
Hosp. = In hospital still.

} Expressed in percentages.

Commenting on the time of remission the authors say : " Most of the group seem to strike about the same average, except the paranoid group in which there is a relative delay before remission. There is still a slight but quite consistent tendency for remissions to develop earlier in the cases of shorter duration. The general average of 9·5 months of hospital residence before remission is, of course, considerably larger than the two or three months required for the new therapies. It is noteworthy, however, that over a quarter of the spontaneous remissions occur within six months, and three-quarters within a year." Their table showing the number of relapses which occurred is interesting and is reproduced in Fig. 27.

31. Benjamin Malzberg (1938) produced a statistical survey of " The Outcome of Insulin Treatment of One Thousand Patients with Dementia Praecox," in which he compared rates of remission and improvement in 1039 cases treated with insulin in the New York State Hospitals in 1937, with those of a similar number of first admissions to the same hospitals from July, 1935, to July, 1936. The " condition of the patient " in the insulin group referred in each case to a period approximately one month after the date of treatment. The non-treated group consisted of the same number per hospital, per sex and per type as the insulin-treated group. Although we are particularly concerned with the non-insulin-treated group at present, Fig. 28 represents both groups, as reference will be made to the comparison later on.

Malzberg also produces tables to show that the rate of recovery is inversely proportionate to the length of insulin therapy required and also to the previous duration of hospital residence.

32. Guttmann, Mayer-Gross and Slater (1939) have recently produced an important paper on the " Short-distance Prognosis of Schizophrenia." This paper is written with the deliberate object of forming a criterion against which the claims of the modern insulin and convulsive treatments may be weighed, and from this point of view material which is prognostically comparatively favourable is selected. This selection is based first of all on the fact that " the Maudsley Hospital admits only those who prima facie have a favourable outlook," and is further limited by the exclusion of all cases whose illness antedated admission by more than 12 months, and of all cases over 45 years old, and of those on whose diagnosis the authors did not all agree. The material from which the selection was made consisted of all schizophrenics discharged from the Maudsley Hospital between January 1, 1934, and December 31, 1935, inclusive, and the investigation determined their state on January 1, 1938. The work was carried out with the aid of a social worker, who visited the majority of the patients' homes, and in cases where there was any doubt regarding the patient's condition, examination at the hospital by one of the authors was, when possible, carried out.

This work is of value not only because of its thoroughness, but because of the manner in which the results are represented in tabular and graphical form. The classification in this case is into the following groups, as suggested by Müller :

(T.R.) *Total recovery* = freedom from symptoms and signs, return to previous social environment and to previous or to an equivalent occupation.

(S.R.) *Social recovery* = return to previous social environment and to previous or equivalent occupation, in spite of persistence of minor signs and symptoms, such as irritability, shyness, shallowness of affective response, etc.

(S.D.) *Social defect* = presence of minor symptoms as above, incapacity to carry out work of previous level and failure to maintain self in the same degree of social adaptation.

(F.I.) *Family invalid* = presence of well-marked symptoms, incapacity to carry out any useful occupation, but manageable at home.

(H.I.) *Hospital invalid* = inmates of mental hospitals, some continuously since discharge from the Maudsley Hospital, some relapsed after a temporary recovery.

(D.) Dead.

(U.) Untraced.

The table in which they give their final results is given in Fig. 29.

FIG. 29.

	Male.		Female.		Total.	
	Number.	%.	Number.	%.	Number.	%.
H.I. with free intervals	10	12·7	15	13·8	25	13·2
H.I. without free intervals	24	30·4	28	25·7	52	28·0
F.I.	9	11·4	9	8·3	18	9·7
S.D.	8	10·1	7	6·4	15	8·3
S.R.	8	10·1	17	15·6	25	13·2
T.R.	13	16·5	29	26·6	42	21·5
D.	5	6·3	2	1·8	7	4·1
U.	2	2·5	2	1·8	4	2·2
Total	79	100·0	109	100·0	188	100·0

Thus, after an average period of observation of slightly more than three years, 41·2 per cent. were in mental hospitals and 9·7 family invalids—a total of 50 per cent. deteriorated to the extent of requiring full support ; 34·5 per cent. were in the community able to fend for themselves and as good as they were before from a purely social point of view ; and 8·3 per cent., while not

recovered, were able to fend for themselves to a certain extent and not require mental hospital treatment.

The question of relapses is dealt with in the following table :

FIG. 30.—*Table.*

Of 69 males, 44 were discharged from hospital	= 64%
,, these 44, 14 were subsequently readmitted .	= 31%
,, these 14, 4 were, at the end of 3 years, out of hospital	= 28%
Of 98 females, 73 were discharged from hospital	= 75%
,, these 73, 21 were subsequently readmitted	= 29%
,, these 21, 9 were, at the end of three years, out of hospital	= 42%

The authors also produce graphs and tables which show (*a*) that the prognosis is better in females than in males ; (*b*) that the total recoveries and social recoveries have an average period of hospitalization of about six months ; (*c*) curves of recovery show that the maximum number of patients are out of hospital in some category of recovery or improvement (i.e. T.R., S.R., or S.D.) at the end of 18 months ; (*d*) age statistics suggest that those whose illness begins at an age of twenty or less have a better prognosis than those who fall ill at a later age ; (*e*) the low fertility of discharged schizophrenics : 1 of the 44 discharged men married and had three children ; 9 of the 73 women discharged married and had 12 children between them.

33. Stalker, Millar and Jacobs (1939) compared remission rates obtained by insulin and cardiazol treatment with those treated by the normal routine methods. Their group of routine treated patients consisted of all first admissions during the five years August 1, 1932, to July 31, 1937, inclusive, a total of 133 cases, of whom 4 were untraceable, leaving 129 followed up in September, 1938, at least 14 months after admission. Their results in tabular form are as follows :

FIG. 31.

Group.	Number of cases.	Percentage.
Complete remission	15	12
Social remission	11	8
At home improved	12	9
Remitted and relapsed . . .	27	21
Unimproved	64	50
Total	129	

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"Complete remission" is defined as patients showing an absence of all symptoms and having insight into their illness.

"Social remission" is applied to patients who are leading a normal social life and following their normal occupations, but who continue to show some schizophrenic symptoms varying from lack of insight to hallucinations.

"At home improved" refers to patients who have shown some definite improvement and been able to return home.

"Readmitted and relapsed" refers to patients who have had a remission of any degree which has allowed them to be at home at least three months, but who have now relapsed.

"Unimproved" refers to those patients who have not had a remission of at least three months.

Of the 15 cases of complete remission, 12 patients had kept well for two years and 1 for one year; 2 had a second attack from which they again recovered. Two cases of the complete remissions had suffered from an acute schizophrenic illness which could not be fitted into any of the standard sub-groups.

34. Briner, O. (1938), published an article dealing with the frequency and quality of remissions in schizophrenia with special reference to prolonged narcosis and "Frühentlassungen" (the latter meaning the discharge of patients from hospital at the earliest moment possible, which often means before waiting until the patient has reached maximum improvement). The cases dealt with were all those of not more than one year's previous illness who were admitted to the Waldau Clinic, Berne, between April, 1933, and July, 1936. His figures given here are the most favourable of any, but in view of the extensive use of prolonged narcosis and "Frühentlassung" they are not strictly comparable with previous ones of the series (and therefore not included in the table below):

Total number of cases	245	
Discharged and since then having had at least one year without relapse	144	(58·7%)
Made up as follows:		
Complete remission	16	
Social recovery	56	
Able-bodied (i.e. employable) but with slight defect	39	
Only partially employable and obviously ill	15	
At home, unemployable or capable of only very limited efforts	18	
Detained in mental hospitals	64	(26·1%)
Dead	37	(15·1%)

The classification of remissions into so many subdivisions is inclined to confuse the issue. The author defines the various gradings thus:

" ' Complete remission ' includes only cases in which personal examination failed to reveal the least trace of schizophrenic defect. We are fully aware that even then one cannot speak of a true medical cure, for, as Bleuler says, the determination of a cure depends on psychological skill and the time available for examination. We have no doubt that in the cases with full remissions something abnormal would be found after prolonged observation.

" Under the heading of ' social recovery ' are included patients who have regained the condition they were in before the onset of the disease and are capable of working, but have some peculiar characteristics in the schizoid sense.

" ' Slightly defective ' is used for patients who, though fit to work, show distinct symptoms of disease."

The other terms explain themselves.

Perusal of the articles described above reveals the extreme difficulty of any reasonable synthesis. Nevertheless, certain facts stand out.

To estimate the prognosis of schizophrenia from the point of view of remission rates necessitates knowledge of (*a*) the short distance prognosis, (*b*) the ultimate prognosis, (*c*) the incidence of relapses. Alternatively, it may be considered from another angle, namely, (*a*) continuous hospitalization, (*b*) continuous remission after discharge, (*c*) relapses. Considering the matter from these aspects, and always allowing for discrepancies as revealed in the text, I have compiled the table below (Table IV).

To understand the table recourse to the previous text is essential.

Diagnosis, from the point of view of this article, may be taken in each case to be based on Bleuler's ideas as opposed to those of Kraepelin. This has allowed me to include in this picture various so-called atypical groups (cf. Bond (1921), Rosanoff (1914) and Langfeldt (1937)).

Regarding the articles which deal with " recovery " rates as distinct from improvement, I have done away with such artificial barriers as are used by many authors to divide the recoveries into numerous categories, and have considered " recovery " to be synonymous with " much improved " in the sense quoted by Hunt, Fieldman and Fiero, namely, " All cases showing a disappearance of all active psychotic manifestations and returning to a substantially normal life in the community with or without scarring of the personality and with or without insight." " Improved " is also used with their meaning, which is as follows : " The ' improved ' group contains all those who showed enough improvement of conduct to warrant release from hospital, but fell short of being much improved because of residual psychotic trends or conduct, or because of such severe personality scarring as to require a definitely sheltered environment." Bearing these criteria and the previous review of the various articles in mind, it is easy to see how the present figures have been completed. In the figures of Guttmann, Mayer-Gross and Slater (1939), for

TABLE IV.—*Remission Rates.*

Author.	Number of cases.	Period in years.	Ment. hosp. or clinic.	Percentages. Recovered.*	Improved.	Recovered + improved.	Not improved.	Dead.
Lemke (1935)	132	1/12–12	C.	14	34	48	43	9
Whitehead (1937)	90	1–2	M.H.	13·3	20	33·3	61	..
Guttmann, Mayer-Gross and Slater (1939)	188	2–3	C.	34·7	18	52·7	41·0	4·1
Faurbye (1937)	72	1–4	M.H.		42·0	42·0	58·0	..
Rosanoff (1914)	222	5	M.H.		32·4	32·4	48·1	12·6
Bond (1921)	91	4–7	Priv. M.H.		45·5	45·5	46·8	7·7
Bond and Braceland (1937)	134	5	Priv. M.H.	20·0	40·0	20·0	56·9	4·1
Stalker, Muller and Jacobs (1939)	129	1–6	M.H.	20·0	19·0	39·0	50·0	..
Wootton and Armstrong (1935)	104	4–7	M.H.	23·0	22·0	45·0	55·0	..
Schmidt, H. (1911)	455	1–10	M.H.	16·2	15·5	31·7	57·9	..
Braatoy (1936)	298	7–10	C.	26·0	16·0	42·0	48·3	7·5
Langfeldt (1937)	100	7–10	C.	21·0	13·0	34·0	56·0	..
Mayer-Gross (1932)	294	10	C.	32·4	4·8	37·2	22·4	42·4
Fuller, R. G. (1935)	242	10	M.H.		43·8	43·8	43·3	12·8
Hunt, Fieldman and Fiero (1938)	641	4–11	M.H.	18·4	16·7	35·1	64·9	..
Totals	3,192	1–11	M.H. or C.	..	..	40·1	53·3	6·6

* For definition of recovery see text.

instance, the " total recovery " and " social recovery " groups are included in the " recovery " group of this table and the " social defect " and " family invalid " groups in the " improved " group.

In some cases it was only possible to represent a figure which combined the recovery and improvement rates together, and in order to tally with these figures, the combined result is placed in a separate column in the cases dealing with recovery and improvement separately.

We see from this table that the total rates of recovery and improvement combined vary within the comparatively narrow margin of 31·7 per cent. and 52·7 per cent., with a total average of 40·1 per cent. These figures show considerably less variation than previous compilations, especially as they are not selected in any way beyond the already-mentioned requisites of criteria of diagnosis and degree of remission.

The average for the " Clinics " is 40·7 per cent. and for the mental hospitals 38·78 per cent.—a very small difference. The interesting fact that there is comparatively little variation between the figures dealing with short histories and those with long histories is probably due to many relapses being only temporary, and the permanent ones being to a large extent counter-balanced by late improvements of a sufficient magnitude to warrant discharge.

In the case of the articles differentiating " recovery " from " improvement," we find that the average recovery rate (as opposed to " improved ") varies from 13·3 per cent. to 34·7 per cent., with an average of 21·7 per cent. The average for the Clinics in this case is 25·6 per cent. and the hospitals 17·98 per cent.

If we accept these averages and examine the widest discrepancies from them, reasons for these become apparent. Lemke's figure of only 14 per cent. recoveries for cases of two years' history (i.e. two years since they first attended the Clinic) is countered by an improvement rate of 34 per cent., and it is probable (since exact definitions are not given) that in the sense in which we are using the word " recovery," many cases might on detailed analysis require to be transferred to the recovery group.

The comparatively low figure of Langfeldt, 21 per cent., is probably due to the fact of his rigid diagnosis. He considers that of these 21 recoveries themselves, 11 were atypical cases. If we included in this group a certain number of the " schizophreniform " or atypical schizophrenias he describes later, and which might be diagnosed by many of the adherents of other schools as " schizophrenia " in the simple sense of the word and with no appended adjective, the average rate of recovery would increase.

The high recovery rate of 34·7 per cent. of Guttmann, Mayer-Gross and Slater may be due to the fact that their cases are exclusively of a maximum history of one year. This would appear to be confirmed by the high recovery rate in short distance prognosis given by Briner (1938), whose cases are also of not more than one year's history.

Mayer-Gross's figure of a 32·4 per cent. recovery rate after ten years is remarkable. The contrasting small percentage of improved cases (only 4·8 per cent.) is worthy of note, however, and one wonders whether this batch of cases may not by a stroke of chance have been prognostically more favourable than the average.

Relapses.

To try to reach a reasonable synthesis regarding the incidence and outcome of relapses is considerably more difficult. Table V represents a synthesis of the various articles dealing with relapses. The average percentage of relapses in the discharged cases is 35 per cent. Fromenty's figures are based on admissions and not discharges, and a total of 30 per cent. of admissions (approximately) relapse. Although there is a considerable discrepancy of findings as to the percentage of relapses which recover or deteriorate, it is seen that roughly speaking (if all the figures are considered together) about 50 per cent. of the total number of relapses are temporary and 50 per cent. permanent. This is what one would infer from the fact that in the figures of remissions previously referred to, there is comparatively little difference between the short-distance and long-distance outcome. It is also obvious, broadly speaking, that single remissions are the most common, double cases less common, and that more than two remissions are comparatively rare.

Summary.

We may summarize the result of this investigation of the literature dealing with remission rates in schizophrenia by the conclusion that an average of 40 per cent. of cases admitted to mental hospitals (including clinics in the continental sense of the word, which has been explained on p. 385) recover or improve, whereas the other 60 per cent. fail to improve or deteriorate. Of these cases the average number of " recoveries " (as defined above) is about a half, i.e. 20 per cent. of all cases admitted. For various reasons the percentage varies considerably from one author to another, but the rate is higher for clinics (26 per cent.) than for mental hospitals (18 per cent.)

Relapses occur in about 20 per cent. of the cases discharged as recovered or improved, of which approximately half are permanent and half temporary.

C. The Relationship of Various Specific Factors of Constitution and Disease Manifestation to Prognosis.

Of the colossal bulk of literature dealing with dementia praecox and schizophrenia comparatively little has dealt with prognosis. Schizophrenia is a disease of a protean symptomatology and a protean course, and the difficulties of assessing prognosis according to individual factors in the patients' constitutions and histories are profound. The most that can be said to have been

TABLE V.—*Relapses.*

	Period (years).	Number of cases.	Number of relapses.	Temporary relapses.			Permanent relapses.		
				1.	2.	More than 2.	1.	2.	3.
Rosanoff (1914)	5	70 D.	16 (22·2%)	4 = 5·7%			12 = 17·1%		
Otto-Martiensen (1921)	3–7	312 D.	105 (33·7%)	53 (16·9%)	13 (4·1%)		39 = 11·7%		
Wootton and Armstrong (1935)	4–7	47 D.	14 (29%)	9 = 18%			5 = 10%		
Hunt, Fieldman and Fiero (1938)	3½–11	225 D.	77 (34·6%)	18 (8%)	10 (4·4%)		49 = 21·8%		
R. G. Fuller (1935)	10	242 D.	55·8%	7·4%			48·4%		
Fromenty (1937)	6–7	271 A.	81 (30%)	38 = 14%			43 = 15%		
				28	6	4	38	4	1

D. = Discharged (total number of cases). A. = Admitted (total number of cases). All percentages are expressed as percentages of the total number of cases discharged, except in Fromenty's article, where they are of the total number admitted.

established so far are certain general prognostic indications, but it has to be borne in mind that prognosis based on these must always be guarded. This especially applies if too much emphasis is placed on the individual factors and the picture as a whole must always be considered.

I propose to enter into a brief survey of the literature on this subject and follow on with a summarizing synthesis. The specific prognostic factors will be divided into two groups: (i) those of constitution, (ii) those of disease manifestations.

GROUP I.

The Constitutional Factors.

Heredity.—Kraepelin is reported by Henderson and Gillespie to have found hereditary abnormalities in 53·8 per cent. of 1,054 cases. Bleuler (1936) states: "Great importance is undoubtedly to be attached to hereditary burdening. Among the direct ancestors of the patients, psychoses, especially schizophrenia, are much more numerous than with the healthy. Most frequently one finds in families schizoid characters, people who are shut in, suspicious, incapable of discussion, people who are comfortably dull, and at the same time sensitive people who, in a narrow manner, pursue vague purposes, improvers of the universe."

Rüdin's (1916) work showed that only 4·48 per cent. of the siblings of parents, one of whom had suffered from dementia praecox, were affected with a similar trouble. The incidence was very much higher where both parents were schizophrenic, 53 per cent. of the offspring being schizophrenics and 29 per cent. psychopaths.

Barrett's (1928) work confirms that of Rüdin in proving that direct inheritance of schizophrenia from one parent is rare, but from two is common. He also shows that tainting of the family tree with psychosis is about equal to that occurring in the manic-depressive group, and in psychoses as a whole; mental abnormalities are much less in the parents of schizophrenics, but greater in the grandparents and greater still in the collateral relations than they are in manic-depressive psychotics.

Myerson (1917), in the study of the family history of 97 cases, concluded that dementia praecox in an ancestor tends to be followed by a similar disease in the offspring.

Leonhard (1936), dividing schizophrenics into typical and atypical in accordance with ideas already reviewed, points out that heredity seems to play a smaller part in the typical than in the atypical group. Langfeldt's (1937) investigations support this.

Luxemburger (1937), Humon (1935) and Rosanoff (1931) established the importance of the heredity factor in the inheritance of schizophrenia in twins.

On Mendelian principles one may quote Devine (1933), who says: "It cannot be claimed that Mendelian studies on the psychoses are in any sense

conclusive." Rüdin, who has worked according to the statistical methods formulated by Weinberg, makes only one positive statement, viz. that certain forms of dementia praecox follow the recessive type of inheritance, and he states very soberly later on that no one can, on the basis of research up to the present time, state that Mendelian laws cannot apply to the inheritance of mental disease. Lewis (1935) states that " apart from the indications afforded in rare instances by two affected parents or by an affected uniovular twin, hereditary guides to prognosis are dubious : in no instance can one prognosticate with certainty from them regarding the present attack."

Age.—The prognostic significance of age is only really intelligible when considered in conjunction with symptomatology, and more especially with reference to the various divisions, i.e. (i) hebephrenic, (ii) catatonic, (iii) simple, and (iv) paranoid. In this respect it is well to point out that the simple and hebephrenic forms occur at slightly younger average ages than the catatonic, and at a considerably younger one than the paranoid form.

Strecker and Willey's (1927) results regarding this age question are interesting. Of 186 cases they found the results expressed in Fig. 32.

FIG. 32.

Sub-group.	Number of cases admitted.	Number of cases recovered.	Average age of onset.
Catatonic	45	18	28
Hebephrenic	49	8	24
Paranoid	85	12	35
Simple	7	0	?

Kraepelin (1919) points out that forms which begin in the earlier years tend to be associated with excitement and depression, and have a better prognosis than those developing later as far as possibility of improvement, although the latter seldom progress to such complete disintegration. " It could therefore be approximately said," he states, " that with advancing age the ability to restore the equilibrium and repair the damage generated by the disease gradually diminishes, but at the same time the work of destruction appears to spread less deeply."

Mauz (1930) declares that the catastrophic* form of the disease appears almost exclusively between the ages of 16 and 25.

Langfeldt (1937) found that of his 100 cases, 35 commenced before 23, 14 of whose course was catastrophic and 5 of whom were cured ; 39 occurred between the ages of 24 and 30 inclusive, of whom 11 were cured ; and 19 occurred from 31 to 40 inclusive, about half of which were catastrophic or

* For a description of the meaning of this term, see later in the text.

chronically progressing. He concludes that "a young age is not always synonymous with an unfavourable prognosis, and a high age does not always protect against an unfavourable course."

Guttmann, Mayer-Gross and Slater (1939) find results suggesting that "those whose illness begins at an age of 20 or less have a better prognosis than those who fall ill at a later date," but add that from a statistical point of view, nothing certain can be said about the effect of age on prognosis. Braatoy (1936) also finds an early onset favourable.

Sex.—Kraepelin (1919) says that men have a larger share in the unfavourable silly dementia (hebephrenia), while women predominate in the paranoid group, but adds that there are not nearly enough statistics to hand to be of any conclusive value, and this may be said still to be true. Guttmann, Mayer-Gross and Slater (1939) draw attention to the distinctly more favourable course of the psychosis in the female than in the male sex, but they do not make clear what are the proportions of men and women in the various subdivisions.

Pollock (1928), in a statistical study of many patients (based on the general census of institutions for mental diseases), finds that schizophrenia is commoner and tends to occur earlier in life in the male sex than in the female. Bowman and Raymond (1928), on the other hand, find no differences in the incidence of each sex.

Bodily build.—The importance of bodily build has been emphasized by the work of Kretschmer (1921) and Mauz (1930). Efforts had been made before those of Kretschmer to classify types of bodily build, but the observations of Kretschmer on this subject revitalized it from a psychiatric point of view. Kretschmer's approach, as Raphael, Ferguson and Searle (1928) point out, was impressionist rather than strictly anthropometric, but work on more exact anthropological lines has tended to confirm his ideas. Briefly, Kretschmer's divisions were as follows:

(1) *The asthenic type*—slender, narrow and thin, with a small trunk and long limbs.

(2) *The pyknic type*—(the reverse of the asthenic) short, thick-set, well-nourished, with large trunk and body and comparatively short limbs.

(3) *The athletic type*—tall, broad-shouldered, wide-chested, with small waist.

(4) *The dysplastic type*—due to or associated with endocrine changes, e.g. thyroid, pituitary, genitals, etc.

Kretschmer claims that schizophrenia occurs for the most part in people of asthenic, athletic and dysplastic build. It is rare in people of pyknic build, who, on the few occasions when it does affect them, seem to do much better than the other builds. Mauz's work confirmed this belief. Schmidt (1919), however, in his study of 18 schizophrenic cases with pyknic build, found among them both cures and dementias. He found that some cases went downhill from the very beginning in a typical schizophrenic manner, and

concluded that in some cases of pyknic build schizophrenia seemed to thrive in a malignant form.

Raphael, Ferguson and Searle (1928) go into the whole matter very thoroughly from an anthropometric point of view, and conclude that "Kretschmer's hypothesis seems to be essentially valid in spite of possible criticisms which may be raised relative to his method of classification."

Kolle (1926) produces a table (Fig. 33) which is of interest in showing the discrepancy of figures by various authorities :

FIG. 33.—*Table Representing the Percentage of the Various Types of Bodily Build in Schizophrenia, according to Different Authors (Kolle).*

Investigator.	Number of cases.	Asthenic.	Athletic.	Dysplastic.	Pyknic.	Mixed.
Kretschmer . . .	175	46·2	17·7	19·4	2·8	13·7
Sioli	43	16·3	16·3	9·2	23·0	34·0
Olivier. . . .	64	42·2	12·5	12·5	13·4	9·4
Henckel . . .	100	34·0	25·0	11·0	2·0	28·0
Moellenhoff . . .	140	15·7	2·9	20·7	5·0	55·7
Mickel and Weeber .	141	43·3	20·5	5·0	17·1	11·2
Wyrsch . . .	192	42·7	14·6	8·8	9·3	24·4
Kolle (Schweren) . .	100	18·0	8·0	4·0	30·0	40·0
Kolle (Jena) . .	100	11·0	8·0	4·0	36·0	41·0
Jakob	168	14·3	33·3	4·8	14·8	28·1
Range . . .		11–46	2·5–33·3	4–20	2–36	9·4–55

The wide variations in this table make one realize the inconclusive nature of their findings. Particular significance may be found in the large number of "mixed" builds found by certain authors. Failure to give comparative figures of the so-called normal population to act as controls is also conspicuous among articles on this subject, combined with divergences of opinion as to the exact proportion of builds in schizophrenics as represented above. These facts all point to the failure to establish statistical conclusions, with the result that at present nothing more than certain general tendencies has been established.

Temperament and mental make-up.—The importance of the temperamental and mental make-up of schizophrenic personalities has long been recognized. Adolf Meyer (1903) as long ago as 1903 pointed out the frequency of previously shy and seclusive personalities among schizophrenic patients, and Hoch (1910) soon after described this oft-occurring type of pre-schizophrenic personality as the "shut-in" personality. Jung, in studying temperaments, had divided them into two main classes, the extravert and the introvert temperaments, and had shown how much more frequently the latter occurs in pre-schizophrenic personalities. These foregoing ideas were finally crystallized into the conception of the schizoid and cycloid mentalities. Kretschmer (1921) made a great effort to correlate the mental sides of personality with his types of bodily build, but although he showed that frequently pyknic build

and extravert temperament or asthenic build and introvert temperament were combined, the correlation is far from absolute.

One thing which has been almost universally agreed on amongst the various authors is the comparatively favourable outlook in the "extravert" type of temperament to the "shut-in" or "introvert" one. Langfeldt (1937) has recently confirmed this, and claims that the outlook in cases with a combination of introvert temperament and asthenic or leptosomatic build is of particularly ominous significance, as had already been pronounced by Kretschmer and Mauz.

The previous history of the pre-psychotic personality.—Kraepelin (1919) says: "Bleuler considers those cases more unfavourable in which from childhood up abnormal qualities have appeared, and Zablocke also thinks that there is in them a stronger tendency to profound dementia. That becomes intelligible if one assumes that in such cases, through an inferior disposition, either there exists a lesser power of resistance to the morbid process, or the morbid process itself, developing insidiously from childhood, has already generated the abnormalities."

Bleuler (1936) states: "In probably three fourths of the cases the personal disposition already expresses itself during youth in a dereistic character inclined to seclusion." "Dereistic" is a word coined from "de" and "res," and meaning "away from reality." Elsewhere, discussing phantasy, he states: "The principal trend of thought is determined by the impulses and the affects. We wish to reach a definite aim. But even in the individual elements of thought we can see the influence of affective needs. It accounts for daily disturbances and even direct falsifications of logic which manifest themselves to a slight degree in normal persons and to a much greater extent in the insane. The material taken up forms new combinations in phantasy whereby different degrees of detachment from experience become possible." An excessive indulgence in the habit of satisfying instincts, sentiments and wishes by refuge in phantasy as opposed to reality lead to dereistic thinking.

The importance of this tendency to day-dreaming and phantasy in schizophrenic personalities is generally well recognized, but in considering it from a point of view of prognosis, certain facts must be borne in mind. Bleuler points out that humans think dereistically (*a*) whenever our knowledge of reality is insufficient for practical needs; (*b*) whenever reality becomes unbearable; (*c*) in dreams and deliria. It is well known that puberty and adolescence are times in everybody's life where the former two conditions are very liable to be stressed, and dereistic thinking is common; and Mapother (1926) has pointed out the difficulty of differentiating between these reactions among so-called normal people and those of the milder schizophrenics. Sullivan (1928) has also emphasized this narrow dividing line between normal adolescent mental activities and those of the onset of schizophrenia.

We may say, therefore, that although phantasy and dereistic thinking of an extreme nature may be prognostically unfavourable factors in schizophrenia, it must always be remembered that they exist in a slight or even a moderate degree in so-called normal people.

The main tenets of Adolf Meyer and his followers have already been cited. This school emphasizes, as we have already seen, the reactions of the individual as a psycho-biological entity, so that from the point of view of prognosis in schizophrenia, its adherents consider the main point to be the previous reactions of the personality to the difficulties and problems of life, rather than the other specific factors of prognosis.

Henderson and Gillespie express their view thus: "The emphasis must be placed more on an attempt to estimate how the individual met his difficulties in his prepsychotic period. If he handled them for the most part in a satisfactory way and if his general interests have been well maintained, then he has a very much better chance of re-adjusting himself than the shut-in or introverted individual."

Psycho-sexual history.—Another point of interest about which much has been said but little proven is the pre-psychotic sexual activities of the patient. Sexual maladjustment would appear to be common in schizophrenia. Lewis and Blanchard (1931) found numerous sexual abnormalities among the 100 recovered cases whose history they investigated: namely, prolonged masturbation in 68 per cent., overt homosexual tendencies in 17 per cent., incest in 3 per cent., bestialism in 1 per cent. and exhibitionism in 1 per cent.

Langfeldt (1937) finds that interest in the other sex seems to have been strikingly little. He says: "In a number of cases the special column in the anamnesic questionnaire circulated to relatives was not filled in; in some it was answered by 'quite normal,' but in quite half of the cases the reply has been 'no particular interest in the other sex.'" He also found that the number of married people in whom schizophrenia occurs is comparatively small, but refuses to commit himself to any definite conclusions owing to an insufficient number of cases, or to enter into statistical comparison of the percentage of marriage at different ages as opposed to the percentage in the total population. Regarding pre-psychotic fertility nothing is said.

Guttmann, Mayer-Gross and Slater (1939) draw attention to the fact that in their discharged cases the post-diagnosis fertility appears to be low. No statistical conclusions are produced. We see, then, that the pre-psychotic sexual history in itself is of little help towards prognosis.

Education and abilities, etc.—The importance of these factors from a prognostic point of view has been considered by Langfeldt (1937), whose observations on his 100 cases are that the prognosis in clever people is not improved thereby, and that indeed, in clever people with a schizoid (or schizothymic) temperament, the outlook is particularly bad. This is probably due to the fact that the lack of external interests is in many the cause of excessive zeal

for and occupation with the study of books. He also disagrees with Mauz that schizokar symptoms (see below) are more common in the more highly educated and intelligent classes than in others. The work of Lewis and Blanchard (1931) and of Bowman and Raymond (1928) also failed to establish any prognostic significance in such factors as education and intelligence. Kahlbaum (1902) could find no significant value in intelligence.

GROUP II.

Disease Manifestations.

Exogenic Factors.

The co-existence of some exogenic factor is to be regarded favourably. Meynert (1928), Bianchi (1928) and Menninger (1928) pointed out the resemblance between reactions in certain confusional states and dementia praecox, and it has already been pointed out that Bleuler would consider these cases as definitely schizophrenic. Menninger (1928) has gone into the question of the onset of schizophrenia following the acute fevers and other diseases very thoroughly, and concludes: "The particular type of psychotic picture revealed by the toxic attack on the encephalon and its conscious fabrications probably depends upon the kind of mental substructure pre-existing, to speak in static terms, or type of habitual conflict solution, to speak in dynamic terms. These pre-existing substructures may be correlated to certain characterological aspects known as temperament, or with certain anatomical aspects known as 'Körperbau'." He adds that if we accept with Bianchi the probable identity of these so-called confusional cases and dementia praecox, their prognosis is more favourable than cases not having such an associated toxic disease. Bresowsky (1928) also stresses the desirability of rating such infective cases as schizophrenias, believing that the specific symptoms are conditioned in these cases by a known type of agent, that were the agent not known no one would hesitate to call them schizophrenias, and that the knowledge of the causative agent should not exclude them from this group.

Schizophrenia following head injuries has been described amongst others by Mapother (1937). The prognosis is not always favourable.

Zilboorg (1938) and others have described schizophrenias following childbirth or during pregnancy, and here again, although many cases do well, the outlook is frequently bad, the attack being often followed by a progressively dementing course. (Cf. Kahlbaum (1902) and Raecke (1910).)

Langfeldt (1937) includes in his description of exogenic precipitating factors alcoholic abuse, "love affairs," unemployment, operations, influenza, gastric ulcer and head injury, and finds that in the cured cases there have been relatively many exogenic traumata immediately prior to the onset of the psychosis. Albrecht (1905) found exogenous factors—imprisonment, influenza, trauma and lactation—present in the histories of only 4·5 per cent. of his 202

cases of dementia praecox, while he quotes Kraepelin as considering acute diseases as responsible for 10 per cent. of all his cases, and imprisonment for 6 per cent. of his males.

Apart from such physical exogenic factors as have been described, various mental factors, such as disappointment in love, financial troubles, unemployment, etc., are mentioned. Strecker and Willey (1927) say that "when the psychosis as a total reaction constitutes an escape and psychological correction of serious circumstances in life which have brought the patient to an impasse, then the prognosis is good." The test they apply in this respect is the appearance in symptomatology of phenomena which correct the hard and uncompromising facts of reality. Henderson and Gillespie (1936) consider that cases associated with obvious exogenic factors tend in general to be more favourable.

The Speed of Onset.

It has been frequently stated that the outlook in cases of sudden onset is better than that in those of insidious onset. Sullivan (1928) and Barrett (1928) and Strecker and Willey (1927) have commented on the comparatively favourable prognosis of acute onset. Bleuler (1936) has commented on the favourable outlook in acute catatonics as opposed to chronic ones. Henderson and Gillespie (1936) state: "Cases which show an acute onset—for instance the katatonic group—have generally been supposed to have a better prognosis than those developing insidiously, but although this may hold true for the majority, it is no absolute criterion. We have seen cases of very acute onset who, far from showing signs of improvement, exhibit a gradual deterioration." Acute onset is also considered favourable by Meyer (E.) (1903).

The Relationship of Group Symptoms to the Subsequent Course.

It has long been the habit to classify schizophrenia according to its acute symptoms into the simple, hebephrenic, catatonic and paranoidal subdivisions, and many efforts have been made to assess the prognostic outlook of each of these divisions.

It may be well to consider for a moment what is meant by these sub-groups. Bleuler (1936) introduces the subject in the following manner: "Although schizophrenia is probably not a homogeneous disease, we are not yet able to divide it into natural subdivisions. Nevertheless, in order to direct oneself in the external forms of the constantly changing morbid picture, four forms have been distinguished according to the presence or absence of definite symptom groups. They are not nosological units and from patient to patient and in the same patient pass over into one another, so that a schizophrenic may be admitted into the asylum for example as a hebephrenic, may remain there for years as a catatonic and may finally be released as paranoid. But most patients remain permanently in their own group."

Simple schizophrenia.—Kraepelin, basing his symptomatology on the original one of Diem (1903), graphically labels its characteristic as " an impoverishment and devastation of the whole psychic life which is accomplished imperceptibly." There is gradual intellectual impairment, so that the early promise of many patients fails to materialize and is replaced by a blight which gradually leads to an increasing inefficiency at work, reducing the sufferer's capabilities to those of simple routine life, sometimes just sufficient to support him in earning his living, but very frequently leading to such a degree of vegetation as to need mental hospital care. As to temperamental changes, Kraepelin says: " Hand in hand with this decline of mental activity there is a change of temperament which often forms the first conspicuous sign of the developing malady. The patients become depressed, timid, lachrymose, or impertinent, irritable, malicious; sometimes a certain obstinate stubbornness is developed. The circle of their interests becomes narrower; their relations to their companions become cold; they show neither attachment nor sympathy; not infrequently a growing estrangement from parents and brothers and sisters becomes noticeable." No delusions or hallucinations or symptoms of catatonia are mentioned by Kraepelin as being present. Bleuler (1936) says: " Where only the *basic symptoms* are visible, we speak of schizophrenia simplex. It is usually a case of a dementia in the sense of schizophrenia that increases gradually in the course of decades." (For details of the basic symptoms the reader is referred to Bleuler's description in his *Text-book of Psychiatry* [1936].)

Kraepelin (1919) refers to its course thus: " The development of this clinical picture invariably takes a series of years. It may stand still for a shorter or longer time, but, on the other hand, it may occasionally experience a more sudden exacerbation. . . . When the disease comes to a standstill it may mean a final though incomplete recovery, but sooner or later the morbid process may again progress . . . . A really profound dementia without fairly acute exacerbations and with continuous, if only slowly progressive, development of the malady does not seem to occur; on the contrary, a dementia simplex which lasts for many years, even for decades, forms often enough the introduction to one of the forms of dementia praecox which goes on to profound dementia." The prognosis in this group may be considered to be normally quite good as regards arrest of the process before profound dementia, but bad as regards recovery.

Hebephrenia was first described in 1871 by Hecker. The characteristics of his syndrome were an onset in early adult life associated with various emotional and affective changes and peculiarities in behaviour, described by Hecker (1871) (quoted by May (1932)) as follows: " The disease begins in the majority of cases apparently as the result of a profound emotional alteration with the various symptoms of melancholia, which soon finds its expression in a vague, indefinite sadness and emotional depression and is then gradually mixed with definite but very changeable delusional ideas. Almost all phases of the

emotional life may, one after another, become involved in the depressive mood, and the melancholia may express itself in contrite self-accusations, sentimental and amorous fancies, or finally in dull brooding ideas of persecution and injury. At the same time, there is soon shown a great superficiality of feeling, and the picture of this melancholia is very different from the pictures of misery shown, for instance, in genuine dysthymia. It often seems as if the patients play or toy voluntarily with their melancholy feelings, and soon a more cheerful mood appears in contrast with the sadness. After an absorption in the awful tragedy, the misfortune which has befallen him, or a lamentation over the sins which he has committed, and the persecution inflicted upon him, the patient often cannot repress a tendency to laugh and make foolish jokes. Then appears an increased tendency to a peculiar activity which may develop into an outspoken expansive mania. As a rule it manifests itself in an aimless, objectless, foolish conduct, in a tendency to tramp life and wandering about, and such individuals may get along in the world for a long while without being recognized as abnormal."

Kraepelin (1919) remarks on the fantastic and bizarre nature of hebephrenic delusions, which involve frequently amazing ideas of bodily change, described thus: "Their morbid sensations sometimes assume the most nonsensical forms. They have no brain any longer. Their back is broken in two; their blood has been taken from them; their body has died; their legs are exchanged. A female patient thought that she had the Kaiser in her stomach, every human being in her body, a telephone, small dolls and a bicycle in her head, that she had a wooden head and that five 'people had been made out of her.'"

Henderson and Gillespie emphasize that this form occurs earlier than the catatonic or paranoid types, and state: "It is characterized by great incoherence of thought, marked emotional disturbance, periods of wild excitement alternating with periods of tearfulness and depression and frequently illusions and hallucinations. . . . The most prominent symptoms are the incoherence in the train of thought, the strange, impulsive senseless conduct and the vivid hallucinations." They say that this type is very difficult to differentiate because often in it there are some symptoms pertaining more to catatonia and others to a paranoid reaction.

Bleuler, on the other hand, states, regarding the typical picture already described by Hecker, "We can also find these symptoms in symptoms of other varieties that break out late," and goes on: "In the present conception of hebephrenia, the age of onset is unimportant, even though most of the cases become sick soon after puberty. It now constitutes the big trough into which are thrown the forms that cannot be classed with the other three forms."

Catatonic group.—Kahlbaum (1874) first described catatonia as a disease having certain definite somatic symptoms in association with psychical changes. Kraepelin, recognizing the tendency of this disease to terminate in dementia, included it to form one of his sub-groups of dementia praecox. Henderson

and Gillespie (1936) say: "Katatonia is usually described as an alternating state characterized by a stage of depression, a stage of excitement and a stage of stupor. . . . We would reserve the name katatonia, as Kraepelin does, for those cases in which are seen the conjunction of peculiar excitement with katatonic stupor."

Bleuler (1936) says: "If catatonic symptoms are permanently in the foreground, the picture is called catatonia. A large part of these forms begins with an acute attack; under certain conditions the psychosis is revealed from one moment to another—other cases begin with a chronic attack with some catatonic peculiarities (e.g. mutism or mannerisms) and remain chronic, while in others chronic and acute conditions alternate. Following acute catatonic attacks a tolerable condition may again recur; the cases that begin furtively all have a bad prognosis without remissions that are worth mentioning."

The catatonic symptoms may be listed as: (1) catalepsy; (2) stupor; (3) hyperkinesis; (4) stereotyped expressions, movements, attitudes, speech (verbigeration), thoughts, wishes or hallucinations; (5) mannerisms; (6) negativism; (7) command automatism and echopraxia; (8) automatism (including compulsive phenomena); (9) impulsiveness.

Henderson and Gillespie (1936) emphasize the emotional side of the picture. There is no doubt that this type of schizophrenic reaction develops much more acutely than other types. Kraepelin himself says that 41 per cent. of such cases tend to develop acutely, 31 per cent. insidiously and others subacutely.

Paranoid group.—Bleuler (1936) says: "Where delusions and hallucinations are in the foreground one speaks of the paranoid type or dementia paranoides. The paranoid type can develop after any melancholic, manic or catatonic acute initial onset, or can begin immediately as such. In the latter case the entire course is, as a rule, chronic throughout." Regarding paraphrenia he says: "Kraepelin attempted to separate from the paranoid forms of schizophrenia, as a special morbid group, those in whom the personality was better retained, and whose feelings, will, and the external behaviour are directly slightly changed; the incorrect actions are determined by delusions. . . . A diagnostic differentiation of the paraphrenias from the other acute or chronic mild paranoid forms was never possible. Moreover our investigations, as well as the course and heredity, show the definite relationship of most, if not all these cases, to the schizophrenias."

Henderson and Gillespie (1936) define the paranoid types as follows: "The paranoid types tend to develop at a later period of life than other forms. The patients affected are usually between 30 and 35 years old. The delusions which are expressed are multiple, unsystematized and changeable, usually of the most fantastic and illogical course and accompanied by hallucinations. These ideas may be of any type: they may be persecutory, depressive or grandiose." They definitely group the paraphrenias with paranoia into a

group which they call "paranoid reactive types"—quite distinct from schizophrenia.

The above short discussion of symptomatology serves to illustrate that there is obvious room for considerable divergencies of opinion regarding the interpretations of the criteria by which a case is labelled as belonging to a definite group. For instance, if one agrees with Bleuler that hebephrenia is a last refuge for all cases not in the other three groups, one will include many cases that might be considered by others as not belonging to this group. In the former case there will appear to be no need for a fifth group, whereas in the latter there seems justification for a fifth "unclassified" group. Again, according to Bleuler's ideas, many cases will be included in the paranoid group which would be excluded as paraphrenias by those supporting the ideas expressed by Henderson and Gillespie.

The matter is certainly rendered no easier when one remembers that Kraepelin's final opinion as revealed in his eighth edition favoured ten subdivisions: (1) Dementia simplex, (2) silly dementia, (3) simple depressive dementia, (4) delusional depressive dementia, (5) circular dementia, (6) agitated dementia, (7) periodic dementia, (8) catatonia, (9) the paranoid dementias (gravis and levis), (10) confusional speech dementia. One finds, moreover, that Bleuler's typical cases are described under such headings as (*a*) catatonic state, (*b*) depressive catatonia, continuous hearing of voices, (*c*) manic catatonia, (*d*) catatonia with religious delusions, (*e*) hebephrenia with manic and depressive attacks, (*f*) depressive hebephrenia, etc.

The actual figures computed to show the percentage of remissions in the various groups are comparatively few and far between. The following may be quoted:

Catatonia.—Kraepelin (1919) reports recovery in 13 per cent. of his catatonic cases, and reports that Mattauschek found "recovery with defect" in 13·8 per cent. of his "catatonic forms." The number of cases dealt with is not stated in either case. Kahlbaum (1902) found in 29 cases, 9 (33 per cent.) completely cured and 7 (25 per cent.) cured with defect. Meyer, E. (1903), claimed that of 26 cases, 14 (30·4 per cent.) were cured, 11 (23 per cent.) cured with defect and 21 (45·6 per cent.) not improved or worse. Of Raecke's (1900) 171 cases, 27 (15·8 per cent.) "were practically cured" and 19 (11·1 per cent.) "improved." Strecker and Willey (1927) found that out of 45 cases of the catatonic type 18 (or 40 per cent.) recovered, but by "recovery" is probably meant "recovery with defect," since elsewhere Strecker says: "I think I would agree that absolute recovery in the sense of restitution does not occur." Bellinger (1932) finds that out of 37 cases of catatonia discharged during a period of ten years (1920 to 1928) inclusive, 9 adjusted themselves to external conditions for a period of over five years, of whom "six seemed to have recovered, while three adjusted themselves to a somewhat sheltered

environment and may be said to have made a social recovery or recovery with defect."

Paranoid forms.—Kraepelin (1919) says that "paranoid forms probably never issue in complete recovery," but quotes Albrecht as finding a few recoveries, and Mattauschek as having 11·1 per cent. of recoveries with defect in his "depressive paranoid form." Strecker and Willey (1927) found recovery (of the quality already discussed with reference to catatonia) in 12 out of 85 cases, or 14·1 per cent. Whitehead (1937) found 8 per cent. of recoveries and 25 per cent. of improved cases. Coles and Fuller (1909) found improvement in 20·8 per cent. of cases.

Hebephrenic type.—Kraepelin's (1919) figures of recovery in this group is 8 per cent. and he quotes the following figures by other authors: Mattauschek, 2·3 per cent. recovery, 9·3 per cent. recovery with defect; Albrecht, no real recovery, 12·5 per cent. recovery with defect; Evensen, 5 per cent. remained independent, 25 per cent. at least still capable of work, and 70 per cent. profoundly demented. Strecker and Willey (1927) found recovery in the sense already described in 8 (16·3 per cent.) out of 49 cases. Whitehead (1937) rates recovery at 14·3 per cent. and improvement at 20·6 per cent. Coles and Fuller (1909) found 20·8 per cent. improved.

The simple form.—The outlook in this type has already been described. I have found no figures which show recovery in this type of the disease, although deterioration tends to be slower in progress and less in degree than in any of the other groups.

The above observations show that although one may speak of general tendencies for cases in each subdivision to progress in a certain way, the variation in opinion regarding the exact criteria differentiating one group from another and one degree of improvement from the next makes exact conclusions impossible.

The continental school of Mauz and Kretschmer, imbued as they are with the importance of "process" symptoms, endeavour to estimate the prognosis of the acute phase by the degree of incidence of these symptoms. Thus Langfeldt (1937) divides symptoms of the acute phase into the following groups: (I) Dementia paranoides, (II) paranoid-katatonic mixed cases, (III) typical katatonia, (IV) cases of a hebephrenic nature, (V) atypical symptomatology of the acute phase of the psychosis; and further complicates matters by dividing the dementia paranoides into three subdivisions.

Mauz (1930) has divided the schizophrenias into two groups, according to the course they take: (*a*) catastrophic, (*b*) episodic. The catastrophic cases pursue a course rapidly deteriorating to dementia. The episodic proceed downwards by a staircase series of acute outbreaks, leaving the patient more deteriorated each time. He describes a new subdivision of cases which he calls the "schizokar" form, and in which there are abundant "process symptoms"

right up to the period of dementia, and in which a catastrophic source is invariably the order of the day.

These new efforts to sift the corn from the chaff do not appear to clarify things from the point of view of British psychiatrists, but, on the contrary, to make them much more difficult, so that a passing allusion is all that one need make here.

The Duration of Psychosis.

The importance of this aspect of the subject has come to the fore with the claim that the new treatments (insulin and cardiazol) produce their most dramatic effects on cases of under six months' duration, and then tail off rapidly until comparatively few cases of over two years' duration show marked benefit. It has been shown, however (as might be expected), by Hunt, Fieldman and Fiero (1938), Taylor and von Salzen (1938), Duncan Whitehead (1938) and others, that a similar state of things exists in cases not treated by these methods, namely, the longer the existence of the psychosis before improvement and cure, the less the chance of these occurring.

Individual Mental Symptoms.

Much has been written regarding the prognostic significance of various individual symptoms, but here again conclusions beyond broad principles have not been reached. The great importance attached to the " process " symptoms by continental psychiatrists has already been explained and stressed, and it would seem well worth while for psychiatrists of other schools to concede at least the very unfavourable nature of such symptoms.

Kraepelin (1919) states, " On the whole the prospects will be more unfavourable the more those peculiarities are developed which we see in the foreground in the multitude of cases finally uncured," and enumerates the following: " Among them there is especially the loss of emotional activity which characterizes the most severe forms of the disease, those that issue in dull dementia ; with it the connecting link falls away which unites rational action to perception and thought. Furthermore the development of fixed mannerisms and stereotyped movements is apparently to be regarded as an unfavourable sign ; they are a sign that the influence of healthy volitional action and inhibition on activity is no longer strong enough to suppress side-impulses and the tendency to repetition. Of specially bad significance is the appearance of simple rhythmical movements ; they seem only to occur when through very deep-reaching destruction of the volitional apparatus lower ancestral motor mechanisms acquire a certain independence. Lastly, the states of excitement and moodiness occurring periodically and abruptly are probably also of evil significance, as they very frequently make their appearance in the incurable

terminal states. These also might indicate that the equilibrating mechanisms were disordered, which otherwise make the psychic life to some extent independent of the fluctuations of bodily conditions.

" We come therefore to the conclusion that the onset of incurable terminal states is announced chiefly by those disorders which signify the loss of mastery over volitional action, be it that the mainsprings of volition are broken, be it that the mechanisms are destroyed which make systematic co-operation of individual volitional actions possible. I would ascribe much less importance to pure disorders of intellect. They appear in general to be further removed from the point of attack of the morbid process, and therefore not so soon to signify incurable phenomena of decay. Not only may hallucinations and nonsensical delusions be again completely lost, but also incoherence of the train of thought, and indeed even marked confusion of speech. Only when with continuance of these disorders emotional activity also gradually disappears is one obliged to consider the hope of equilibrium being restored as very slight."

Meyer, E. (1903), emphasized the unfavourable significance of stereotypy. Raecke (1910) expressed doubt as to the evil significance usually imputed to such symptoms as apathetic personality, uncleanliness, loss of sense of shame, hallucinations of the lower senses—smell, taste and verbigeration—but tentatively agreed that grimacing with inveterate negativism, command automatism and persistent flexibilitas cerea were of bad prognosis.

Hoffmann (1919) wrote a monograph in which he deals with the significance of various individual symptoms and gives a copious bibliography concerning them. Forel (1931), among others, points out the occurrence of delusions to be of little significance from a quantitative point of view, but of considerable consequence from a qualitative one. If the delusions find their source in recent conflicts, or can co-exist with a grip on reality, the outlook is favourable compared with that for the bizarre and non-systematized delusions frequently seen.

The presence of manic-depressive features has been recognized by many writers as prognostically favourable. These writers include Kretschmer, Mauz, Langfeldt, Raecke and Kirby.

Lewis (1935) says that the nature of the symptoms is a very poor guide to the sequel: " . . . It is almost true to say that the only important symptoms in this regard are those which indicate that the illness has already been present a long while and that behaviour and modes and affective response are narrowed and more or less fixed." In the latter respect he instances stereotypies of movement or speech, long-drawn-out stupor with negativism, impulsive violence, muscular tension or vasomotor changes.

Summarizing articles of this aspect of prognosis have been written from various points of view by Muller (1935), Lewis (1935), Forel (1931) and Schaeffer (1938).

SUMMARY.

An eclectic view of our present state of knowledge according to a survey of the literature may be summarized thus :

(1) *Constitutional Factors.*

(a) *Heredity.*

The incidence of schizophrenia in (i) a uniovular twin sibling or (ii) both parents, on the rare occasions when it does occur, must be considered as prognostically very serious. Where it occurs in one parent and in the grandparents on the other side the prognosis must be considered as probably bad, and its presence in a large number of collaterals or siblings renders the outlook dubious (although frequently ominous for the patient).

(b) *Age*

is of greatest importance when considered in relation with the types of schizophrenia, the hebephrenic and simple types coming on earliest, the catatonic type later, and the paranoid later still. Apart from any indications from the type picture, the earlier cases are supposed to have a better prognosis than later ones (except in cases with exaggerated pathogenic symptoms apparently unrelated to exogenic factors (cf. Mauz's schizokar type), which usually have a catastrophic course).

(c) *Sex.*

Conclusions in this respect are dubious, although the prognosis is thought by many to be more favourable in the female than in the male sex.

(d) *Bodily build.*

The pyknic type of build is always to be considered as a favourable factor and the asthenic (leptosomatic) type unfavourable. It must be remembered that many people are of an indeterminate build, and not much significance should be attached to any except the extreme types.

(e) *Temperament.*

An extraverted (or cyclothymic) temperament is favourable, an introverted or schizoid one unfavourable. Again there are many temperaments which must be considered as indeterminate, and only very definite types should be considered as really significant.

(f) *Pre-psychotic personality.*

The previous reactions of the individual to various problems and difficulties of life is of considerable importance. A history of having dealt with these directly and confidently is favourable, whereas one of hedging, dodging the issue, and taking refuge in indulgence in phantasy and dereistic thinking is of sinister significance.

(g) *Sexual history.*

Most schizophrenics have a history of sexual maladjustment of some type, but beyond their effect as producers of conflict, no prognostic significance is really known.

(h) *Education and abilities.*

No prognostic significance can be attached to these. A type which often does badly is the brilliant scholar who has a schizoid temperament.

(2) *Symptoms.*

(a) *Exogenic factors.*

The presence of a definite and obvious exogenic factor is usually favourable.

(b) *Speed of onset.*

The insidious onset is usually prognostically unfavourable compared with the more rapid and acute type.

(c) *Sub-divisions.*

Owing to the tendency for symptoms sometimes to shift from one acute manifestation to another (Bleuler, 1936) prognostic assessment may be difficult in early cases. Of the cases that remain progressively in one group, the catatonics have the best outlook as regards recovery, the hebephrenic next and the paranoidal the worst. As regards intensity the order is the reverse. Variation of individual outlook in diagnosis renders conclusions dubious. Many cases are indeterminate, and it is only the very definite cases in which this prognostic significance is at all valid.

(d) *The presence of process symptoms*

in the sense already described would appear to be prognostically of unfavourable significance, in proportion to the degree of their manifestation.

(e) *The duration of psychosis.*

Speaking generally, the longer the duration of the psychosis, before recovery or improvement, the less the chance of this occurring.

(f) *Individual mental symptoms.*

The presence of manic-depressive symptoms is prognostically favourable in proportion to the quantitative degree in which they present themselves. Delusions are of little significance from a quantitative point of view, but considerably so from the qualitative one. If the delusions find their source in recent conflicts or can co-exist with a grip on reality, the outlook is comparatively favourable. Prolonged existence of stereotypies, grimacing, flexibilitas cerea, negativism and command automatism are to be considered unfavourably.

PART II.

A Katamnesic Follow-up of 120 Male Cases of Schizophrenia Admitted Consecutively to Cane Hill Mental Hospital during the Years 1933–1937 inclusive.

As was pointed out in the introduction to this thesis, this study of prognosis in schizophrenia was undertaken from two different angles: (1) A detailed survey of the literature on the subject; (2) a personal follow-up of cases with the purpose of effecting any correlation possible with the findings in the literature, and of noting any outstanding features that might be of importance to the subject as a whole.

The Material.

It had originally been intended to follow up all male and female cases over a period of ten years. Owing to the lack of adequate social histories in the earlier years (there was no fully-trained hospital social worker as there is now) it was decided to limit the period to the five years 1933 to 1937 inclusive. Such a large proportion of discharged female cases were untraceable that any conclusions regarding this sex were rendered impossible, and it was deemed preferable to omit them altogether. Thus I was finally left with all schizophrenic male patients admitted to Cane Hill Mental Hospital from 1933 to 1937 inclusive. All transfer cases were included in this series, as it was considered unjustifiable not to do so if an accurate history of the whole group were to be obtained. Patients who had a history of having been in a mental hospital previously (in other words, "readmissions" or "relapses") were also all included, as relapses are a constant feature of schizophrenia and their inclusion was desirable to obtain a representative picture of the whole.

Only one other point of selection was used, namely, the exclusion of all cases over 45 years of age on admission. This was done because the comparative rarity of schizophrenia in late age would render its possibilities of any real effect on the figures so remote that the extra work involved in diagnosis did not seem warranted.

The object of this follow-up was to ascertain the histories of all cases

both before and after admission and their final condition on December 31, 1938. With this in view, the following questionnaire was addressed to the nearest relatives of all the patients discharged during the fixed period :

1. Is the patient still alive ? If not, when, and from what causation, did he die ?

2. Has the patient ever been in any other mental hospital or institution since his discharge ? If so, give the names of the hospitals concerned, and the periods of residence in each.

3. Give a history of the patient's mental state since discharge.

4. Give a history of the patient's present mental condition.

5. Give periods of employment and unemployment since discharge, stating what form employment took.

This questionnaire was further substantiated by the visit of the hospital social worker (fully trained and qualified in this specialized work) to the homes of all patients within Greater London about whom satisfactory answers to the questionnaire had not been obtained, and a report was produced by her of all the information obtainable.

The histories of those patients who had been transferred to other hospitals was obtained by requests to the Medical Superintendents of the various hospitals concerned for a report on the patient's progress. When the patients were reported as discharged from the hospital to which they had been transferred, the address of the relative or friend to whom they had gone was obtained, and a special letter was sent, inquiring after their subsequent progress. Where the patients had been in a mental hospital previously, or had attended one of the out-patient clinics, the hospitals or clinics were communicated with, and details obtained of the patient's condition and progress during his connection with the hospital concerned.

Diagnosis.

The question of diagnosis was simple in all cases who had been under observation for a reasonable duration. Any difficulty that did arise was associated with cases of comparatively short stay in hospital. The well-known possibility of mis-diagnosis in early cases was overcome by including in the follow-up all cases of so-called confusional insanity and manic-depressive psychosis. By doing so it was possible to make sure that any cases who in their early stages might be diagnosed as these psychoses, with ultimate maturation into schizophrenia, would not be left out of the series.

The criteria on which the diagnoses were made were those common to most British psychiatrists. The fundamental symptoms and signs were those generally recognized, and the attitude in general was eclectic. Any case in which there was doubt as to the diagnosis was excluded. Paraphrenias or delusional insanities, which are included by Bleuler among the schizophrenias, were not included. The continental division into typical and atypical schizo-

phrenias is not used in this part of the world and was not introduced as an innovation here. Probably my outlook, which, to the best of my knowledge, is representative of the majority of psychiatrists in this country, may be best summed up as a cross between the " reaction formation " ideas of Adolf Meyer and Bleuler's more general conceptions of the psychosis.

Regarding the subdivisions, the commonly recognized criteria of the catatonic, paranoid and simple types were used. Hebephrenia was used in the sense of an entity of its own as described by Hoch and Kraepelin, and not as a backwater for the acceptance of all cases not fitting into the other groups, as conceived by Bleuler. An " indeterminate " group was also included, as I considered that there is always justifiable reason for doing so when considering a large number of cases.

The Scope and Limitations.

I am fully aware of certain deficiencies in this undertaking. (1) First, there are those shortcomings of all questionnaires, namely, inadequate and inaccurate observations of those to whom they are addressed. In this case these deficiencies were probably less marked than is usual, and when they did occur, they tended to do so in the favourable rather than unfavourable direction. Moreover, in a large proportion of such responses matters were cleared up by establishing personal contact with the addressees through the agency of the hospital social worker.

(2) Where patients are to be classified into such groups as " improved " or " much improved," etc., there are always a few borderline cases in which the information obtainable leaves some doubt as to which subdivision the patient should be apportioned to. In all doubtful cases I deliberately tended to the favourable as opposed to the unfavourable side of the question.

(3) Personal examination of all discharged cases was impracticable owing to the large distances from the hospital that most of them had dispersed to.

(4) The criticism might be levelled that the records of diagnosis and progress of the various patients and the reports from outside hospitals were the work of many men and open to excessive discrepancies. Had this been a question of detailed observation the criticism might have held good, but the fact that the investigation dealt with certain salient features only practically obliterated any such possibility, and the information obtained regarding these patients can be said to have almost always been valid.

The Results of the Investigation.

In classifying the condition of patients, those divisions used by Hunt, Fieldman and Fiero (1938) are employed (see p. 403).

This classification is not adopted because I think it necessarily the best in all circumstances, but because I consider it the most suited to the matter in hand. One of the biggest mistakes in psychiatry is over-classification, and

apparent glorification in divisions and subdivisions. This classification has the virtue of comparatively few groups, and the criteria of each group fit in, broadly speaking, with the most important aspects of the question from the social point of view, namely, the number of patients who (1) recover sufficiently to carry on at their old employment; (2) improve sufficiently for discharge to sheltered surroundings, having retained obvious residual symptoms; (3) have to remain permanently in a mental hospital.

The fact that no "recovery" group is included does not mean that I consider that "recovery" (in the sense used by Muller (1937) implying complete disappearance of symptoms, full insight, normal affective activity and ability to return to usual professional work) does not occur; but that in this series, owing to lack of opportunity of personally examining the discharged patients, the occurrence of "recovery" as opposed to "much improved" could never be certain, and I agree with Hunt, Fieldman and Fiero (1938), and Lewis and Blanchard (1931), that differentiation between these two classes is a difficult task at the best.

Most authors of such a follow-up as this content themselves with representing their results in the form of tables, but these all too frequently give a very one-sided impression, the matter being considered from one angle only, or one particular aspect of the subject being emphasized at the expense of the others. For instance, many articles have been written dealing with cases admitted over a large number of years, assessing their condition comparatively soon after the latest admission. The result is that some cases have been followed up for several years longer than others, but notwithstanding this, their conditions are lumped together as equivalents in a table of remission rates, without any mention being made of the period over which each case has been surveyed, and without details being given of the history intervening between admission and the date of the follow-up.

It has been my object in this thesis to produce tables which will view the matter from all angles, leaving no stone unturned to get a thorough and correctly proportioned knowledge of the picture as a whole. The following tables it is to be hoped will give an accurate and unprejudiced idea of the true state of affairs.

Table A represents the fate of the 120 cases as shown by their condition on December 31, 1938.

Table B gives the number of cases admitted each year, the number of these subsequently discharged, their condition on discharge and their condition on December 31, 1938.

Table C shows the condition of the patients at six-monthly intervals following their admission to Cane Hill.

*Graph A** completes the picture by representing the whole history of each patient from the time of admission to any mental hospital. The maximum

* Owing to cost, it was unfortunately not possible to reproduce this.

period is limited to ten years in order to keep the graph within reasonable limits. There are one or two patients whose history extends over a slightly longer period than this, but the extra period has been cut out. The material for this graph includes, as already stated, all readmissions, and in this instance obviously dates from their first admission to any mental hospital, not necessarily Cane Hill. Even now the picture is not complete, as there remains the time before admission to any hospital during which symptoms prevailed. This aspect of the question is tackled under the next section—see Table E.

Table D indicates the present condition of the patients still in mental hospitals.

Symbols used in Tables A, B, C, and D.

Ad. = Admissions.
Disch. = Discharges.
M.I. = Much improved. } For definitions see text, p. 403.
I. = Improved. }
U.I. = Unimproved. }
D. = Dead.
N. = Not employable.
N.T. = Not traced.
M.H. = In a mental hospital.
W. = Condition worse than on admission.
O. = In an observation ward.
F. = In an open (free) ward.
E. = Employed.

TABLE A.—*Showing the Condition on December 31, 1938, of 120 Consecutive Cases of Schizophrenia Admitted to Cane Hill Mental Hospital during the years 1933 to 1937 inclusive.*

Number of cases admitted 1933–1937.	Condition of cases on December 31, 1938.						
	M.I.	I.	U.I.	D.	N.T.	Discharged.	M.H.
120	8 (6·6%)	11 (9·1%)	83 (69·1%)	6 (5%)	12 (10%)	15 (12·5%)	87 (72·5%)

TABLE B.—*Showing the Conditions of the same 120 Cases (as Table A) at the Time of their Discharge and on December 31, 1938, in Yearly Groupings.*

Year.	Number of cases.		Condition at discharge.			Condition on December 31, 1938.					
	Ad.	Disch.	M.I.	I.	U.I.	M.I.	I.	U.I.	D.	N.T.	M.H.
1933	22	7	2	5	0	1	2	1	0	3	1
1934	30	13	4	5	4	2	2	2	0	7	2
1935	30	9	5	4	0	3	3	2	0	1	2
1936	16	9	2	6	1	2	3	4	0	0	3
1937	22	5	2	1	2	0	1	3	1	0	2
Total	120	43	15	21	7	8	11	12	1	11	10
			43			43					

TABLE C.—*Representing the Mental Conditions of the 120 Patients (as Table A) at Six-monthly Intervals following their First Admission to a Mental Hospital.*

Period after first admission to a mental hospital.	Number of cases traced.	Condition at the end of the period.				
		M.I.	I.	U.I.	D.	N.T.
6 months	111	5 (4·5%)	3 (2·7%)	2	0	1
1 year	107	8 (7·4%)	7 (6·5%)	2	1	5
1½ years	102	9 (8·8%)	9 (8·8%)	3	2	0
2 ,,	93	8 (8·6%)	10 (10·7%)	2	0	3
3 ,,	52	6 (11·5%)	8 (15·3%)	2	2	1
5 ,,	29	2 (7·8%)	3 (10·3%)	0	0	1
7 ,,	10	0 (0%)	1 (10%)	0	0	0

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TABLE D.—*Showing the Condition of the* 84 *Hospitalized Patients still in Cane Hill Hospital on December* 31, 1938.

Number of cases.	M.I.	I.	Unchanged.	W.	O.	F.	E.	N.
84	0	5	28	54	52	35	51	36

Scrutinization of these tables reveals a sad picture indeed. It is seen that the percentage of cases showing much improvement (6·6 per cent.) and improvement (9·1 per cent.) falls far below the average quoted in the literature, and indeed savours more of the fate implied in the name "dementia praecox" than that of schizophrenia. If the matter were to end with a mere publication of these remission rates it might well be said that still more divergence had been added to a field of complete asymmetry. The fact of the discrepancy is obvious, and if it is not to be considered a veritable torpedo of my conclusions from a search into the literature regarding remission rates, it requires adequate explanation. This is to be found in an assessment of the prognosis of each individual case according to the significance of the various specific factors, and acts as a strong vindication of my claim that the publication of figures of remission rates without ample indication of the prognostic outlook in the material considered is practically valueless.

It is not intended here to try and prove or disprove the prognostic significance of various individual signs and symptoms. The limitations of the scope of the katamnesic follow-up already referred to would render this unfeasible. On the contrary, my object at this point is to review each of the 120 cases in the light of conclusions reached in Part I of this thesis and see whether, if such a procedure had been adopted prior to the compilation of the above figures (Tables A, B, C, and D), it would have indicated that such poor results were to be expected. To accomplish this I decided to consider and assess each case with regard to the following points: age, duration of psychosis prior to admission to this hospital, hereditary factors, bodily build, temperament, pre-psychotic reaction, rapidity of onset, symptomatology of the acute phase, course of psychosis, present condition. It seemed to me that there would be little purpose in presenting case histories of all the cases, as has been done by some authors in works of this kind (cf. Langfeldt (1937)). The results of this investigation are therefore represented in tabular form in Table E. This makes possible a rapid comparison of a large number of cases. Many authors of such comparisons as these lose sight of the significant features in a labyrinth of detail. In presenting the accompanying table (Table E) I aimed in my classification at representing salient features at the expense of detail, and used as few gradings as were essential for this purpose. These are given herewith. A blank was left where there was doubt as to assessment.

(1) *Heredity.*

Attention was paid to the existence of mental disease and tuberculosis in relatives. The difficulties of finding out the particular mental disease from which each relative suffered were prodigious, and I decided to content myself with recording the presence of mental illness in known relatives, without details of the type of psychosis entailed. I included besides psychoses the presence of tuberculosis in the family, since the association of these two diseases is so well recognized and is probably of significance in respect to prognosis.

(2) *Bodily build.*

It was only possible to obtain details of bodily build in those patients still resident in this hospital. Assessment was made on an impressionist rather than on an anthropological basis. Four types were used: (i) the asthenic, (ii) the athletic, (iii) the pyknic, (iv) the indeterminate. Only cases with well-marked features establishing their type beyond doubt were included in the first three groups, the rest being placed in Group IV.

(3) *Temperament.*

Schizoid, cycloid, psychopathic, indeterminate and normal temperaments were described. The terms "schizoid" and "cycloid" are used with the usual meanings. Psychopathic is used for the temperament of a psychopathic personality. Indeterminate refers to cases where the facts ascertained do not make it certain which abnormal group should be used. Normal refers to a temperament whose traits occur within the bounds of so-called normality.

(4) *Pre-psychotic reactions.*

The subdivisions of this item were made on purely arbitrary grounds into (1) good, (2) fair and (3) poor reactions, the allotment being made by my personal judgment on having ascertained as much as possible of their past history. It was quite often necessary to leave this column a blank owing to insufficient evidence.

(5) *Rapidity of onset.*

Acute, sudden, gradual and insidious modes of onset are described.

Acute = those cases in which symptoms are severe and appear from the blue within a few days of admission.

Sudden = cases in which relatives had noted moderately severe symptoms for only a few weeks before admission.

Gradual = cases in which relatives had noted symptoms becoming progressively worse for months and years before admission.

Insidious = those cases in whom the symptoms have been of such a pernicious nature as to have escaped notice until the psychosis is fully developed and then been recognized by retrograde inspection.

TABLE

1. Serial No.	2. Status.	3. Date of admission.	4. Age on admission.	5. Duration of previous history.	6. Previous hospital treatment.	7. Heredity.	8. Bodily build.
1	T.	13.i.33	33	6 m.	—	Mother died in M.H.	?
2	D.	14.i.33	30	?	—	*Nil*	?
3	C.	20.i.33	23	4 m.	—	,,	Ind.
4	C.	31.i.33	36	4 y.	—	?	Asth.
5	C.	14.iii.33	27	2 y.	M.H. Readm.	*Nil*	,,
6	T.	24.iii.33	31	24 y.	—	,,	?
7	D.	26.iv.33	20	5 w.	M.H.	,,	?
8	C.	1.vi.33	36	3 y.	,,	,,	Ind.
9	V.D.	1.vi.33	26	2 y.	,,	—	?
10	T.	18.vi.33	18	?	—	Mother died of T.B.	?
11	C.	22.vi.33	31	4 y.	M.H.	*Nil*	Asth.
12	C.	23.vi.33	20	?	?	?	,,
13	C.	28.vi.33	31	?	?	?	,,
14	C.	4.vii.33	26	2 y. ?	?	Mother in M.D. hosp.	?
15	C.	10.viii.33	31	7 y.	M.H.	*Nil*	Ind.
16	C.	12.viii.33	23	2 d.	—	?	Asth.
17	C.	19.ix.33	31	4 y.	M.H. (c.)	*Nil*	Ind.
18	T.	30.ix.33	30	9 y.	M.H.	Aunt M.H.	?
19	C.	5.x.33	30	3 y.	—	*Nil*	Ind.
20	C.	14.x.33	32	1 m.	?	?	Asth.
21	T.	28.x.33	20	1 y.	M.H. (V.)	Mother died T.B.; uncle had T.B. at 18	?
22	C.	2.xii.33	20	2 m.	M.H. (c.)	Mother in M.H.	Ind.
23	D.	25.i.34	23	1 m.	—	Father, 2 siblings and self T.B.	?
24	D.	30.i.34	34	3 y.	—	*Nil*	?
25	T.	16.ii.34	27	2 y.	—	Mother died T.B.; twin brother T.B.	?
26	X.	27.ii.34	26	?	—	Case paper lost—patient dead.	
27	C.	22.iii.34	17	?	—	*Nil*	Asth.
28	C.	5.iv.34	26	1 y.	—	?	Ind.
29	T.	12.iv.34	29	?	—	?	?
30	D.	3.v.34	23	10 d.	—	?	?
31	D.	8.v.34	29	5 y.	—	?	?
32	D.	18.v.34	22	2 y.	—	?	?
33	D.	24.v.34	23	?	—	*Nil*	?
34	C.	30.v.34	21	6 m.	M.H. (c.)	,,	Ind.
35	D.	31.v.34	26	3 y.	—	Mat. aunt insane, —M.H.	?
36	C.	6.vi.34	20	11 m.	O.P.	*Nil*	Asth.
37	C.	28.vi.34	26	14 d.	?	,,	Ind.
38	C.	5.vii.34	34	7 y.	M.H. (c.)	?	Asth.
39	C.	10.vii.34	31	1 y.	M.H.	?	,,
40	D.	21.vii.34	16	18 m.	,,	?	?
41	C.	25.vii.34	35	3 y.	,,	?	Asth.
42	C.	27.ix.34	17	6 m.	?	Grandmother died T.B.	,,
43	C.	18.x.34	29	5 y.	O.P.	*Nil*	Ind.
44	D.	18.x.34	28	10 m.	?	Grandmother died T.B.	?
45	C.	24.x.34	34	7 y.	M.H.	*Nil*	Ind.
46	C.	25.x.34	23	5 m.	?	Mother in M.H.	Asth.
47	C.	27.x.34	29	3 w.	M.H.(R.)	Brother T.B.	,,
48	D.	9.xi.34	26	2 y.	O.P.	Mother died M.H.; uncle in M.H.; aunt suicidal	?

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E.

9. Temperament.	10. Pre-psychotic reaction.	11. Onset.	12. Exogenic factors.	13. Acute symptoms.	14. Course.	15. Present condition.
?	?	?	?	Heb.	Decl.	U.O.R.
Norm.	Fair	Grad.	Head trauma	Cat. dep.	Imp.	I.D.E.
Schiz.	,,	,,	Mast.	Ind.	Deter.	W.O.N.
?	?	?	?	Cat.	Unch.	U.O.N.
?	?	?	?	Ind.	Fluct.	W.F.E.
Schiz.	Poor	Insid.	*Nil*	Par.	Unch.	U.O.N.
Ind.	Fair	Sud.	,,	Ind.	Imp.	M.I. N.T.
Schiz.	,,	Grad.	Mast.	,,	Decl.	W.O.E.
M.D.	?	,,	?	Cat. dep.	Unch.	U.D.N.
?	?	?	?	Cat.	Imp.	I.D. N.T.
?	?	?	?	Ind.	Fluct.	I.O.E.
?	?	Grad.	Head trauma	,,	Decl.	W.F.E.
?	?	?	?	Par.	,,	W.F.N.
?	?	?	?	Simple	,,	U.O.N.
Schiz.	Fair	Grad.	Unempl.	Par.	Unch.	U.F.E.
?	?	Ac.	?	Heb.	Det.	W.F.N.
Norm.	Good	Grad.	Head trauma	Ind.	,,	W.O.N.
Ind.	Fair	,,	Father's death	Par.	Decl.	W.O.E.
Schiz.	,,	,,	Unempl.	,,	Unch.	U.F.E.
?	?	?	?	,,	Decl.	W.O.N.
Schiz.	Fair	Insid.	Mother's death	Cat.	Imp.	M.I.(D)
Ind.	,,	Sud.	Def. Unempl.	Proc. par.	Det.	W.O.N.
Cycloid	Good	Grad.	Gastritis.	Cat. dep.	Fluct.	M.I. D.E.
Norm.	,,	,,	*Nil*	Par.	Unch.	U.D.E.
?	?	,,	,,	Heb.	Decl.	W.F.E.
?	?	?	?	Cat. exc.	Det.	W.O.N.
Norm.	Good	Sud.	*Nil*	Heb.	Catast.	,,
Schiz.	Fair	Ac.	Unempl.	,,	Imp.	I.D.N.T.
M.D. Norm.	,,	Sud.	Lack of food	Simp.	M.Imp.	M.I.D.E.
M.D. Psy. P.	Poor	Grad.	Mast.	Ind.	Unch.	U.D.N.T.
Schiz.	Fair	,,	*Nil*	Cat.	Imp.	I.D.N.
Ind.	,,	,,	,,	Heb.	,,	I.D.N.T.
Norm.	,,	,,	,,	Ind.	,,	I.F.E.
Schiz.	Poor	Insid.	,,	,,	Decl.	W.D.N.
?	?	Sud.	?	Cat. dep.	Unch.	U.F.E.
Norm.	?	?	?	Cat.	Imp.	I.O.E.
?	Fair	Grad.	Head trauma	,,	Det.	W.O.N.
Ind.	,,	Ac.	*Nil*	Ind.	Decl.	W.O.E.
Fair	,,	Grad.	Unempl.	Proc. heb.	Imp.	I.D.E.
?	?	,,	Surg. op.	Par.	Decl.	W.F.N.
M.D. ?	Fair	,,	,,	Cat.	Det.	W.O.N.
Schiz.	,,	,,	*Nil*	Heb.	,,	,,
,,	Poor	,,	Psychog.	Proc. heb.	Fluct.	U.D.N.
?	?	,,	Divorce	Ind.	Decl.	W.F.E.
Schiz.	Fair	Insid.	*Nil*	Heb	,,	,,
,,	?	Grad.	?	Par.	Det.	W.F.N.
?	?	,,	*Nil*	Simp.	Unch.	U.D.N.T.

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TABLE

1. Serial No.	2. Status.	3. Date of admission.	4. Age on admission.	5. Duration of previous history.	6. Previous hospital treatment.	7. Heredity.	8. Bodily build.
49	C.	28.xi.34	21	?	M.H.T.	Mother in M.H.; brother died M.H.	Ind.
50	C.	8.xi.34	34	2 m.	?	?	Asth.
51	C.	20.xii.34	24	3 y.	O.P.	*Nil*	,,
52	V.	31.xii.34	19	2 y.	M.H. (c.)	,,	,,
53	C.	8.i.35	21	9 m.	—	,,	,,
54	C.	9.i.35	33	4 y.	M.H. (R.)	,,	Ind.
55	C.	10.i.35	20	1 m.	—	,,	,,
56	X.	10.i.35	30	1 y.	—	,,	?
57	C.	5.ii.35	32	5 y.	—	,,	Asth.
58	C.	5.ii.35	28	6 y.	M.H.	,,	,,
59	C.	4.iii.35	37	4 y.	—	,,	Ind.
60	C.	24.iv.35	34	2 y.	—	,,	Asth.
61	C.	25.iv.35	29	4 m.	M.H.	Grandfather, aunt and sister in M.H.	?
62	D.	29.iv.35	22	1 d.	—	*Nil*	?
63	D.	1.v.35	21	4 d.	—	,,	?
64	C.	4.vi.35	30	11 m.	—	,,	Asth.
65	D.	25.vi.35	22	3 w.	—	,,	?
66	D.	26.vi.35	19	2 y.	—	Grandfather in M.H.	?
67	C.	9.vii.35	29	3 m.	—	*Nil*	Pyk.
68	C.	9.vii.35	28	?	—	,,	?
69	D.V.	11.vii.35	32	3 m.	—	,,	?
70	D.	16.vii.35	38	8 y.	—	,,	?
71	C.	30.vii.35	26	2 y.	—	,,	Ind.
72	X.	7.viii.35	20	?	—	,,	?
73	C.	18.viii.35	24	?	—	Sister in M.H.	?
74	D.	29.viii.35	29	6 m.	—	*Nil*	?
75	C.	13.ix.35	38	1 y.	M.H. (c.)	,,	?
76	X.	21.viii.35	24	?	,,	,,	?
77	X.	24.ix.35	35	?	?	?	?
78	T.	30.ix.35	22	3 y.	?	1 sibling schiz.; mat. aunt mania	?
79	C.	10.x.35	28	?	?	?	?
80	C.	25.x.35	19	?	?	*Nil*	Ind.
81	C.	4.xii.35	25	3 m.	M.H. (c.)	,,	,,
82	C.	23.xii.35	35	5 y.	?	,,	Pyk.
83	C.	13.i.36	35	1 y.	M.H. (c.) O.P.	1 sibling died schiz.; Father died at 40 T.B.	Asth.
84	D.	21.i.36	34	2 m.	?	?	?
85	D.	29.i.36	36	14 d.	?	*Nil*	?
86	D.	22.ii.36	21	3 y.	?	Grandmother died T.B.	?
87	D.	30.ii.36	20	9 w.	?	*Nil*	?
88	D.	25.iii.36	20	1 w.	?	,,	?
89	C.	5.vi.36	20	2 y.	O.P. (c.)	Sister T.B.	Asth.
90	C.	19.vi.36	25	14 m.	M.H. (c.)	*Nil*	,,
91	C.	9.ix.36	20	10 m.	,,	Father died M.H.	Ind.
92	C.	18.ix.36	27	9 m.	?	Mother died T.B.	Asth.
93	C.	22.ix.36	30	10 y.	?	*Nil*	,,
94	D.	15.x.36	28	3 y.	M.H.	Aunt suicidal	?
95	C.	20.x.36	38	1 y.	M.H. (V.)	*Nil*	Asth.
96	D.	11.xi.36	34	1 y.	?	Grandmother suicidal	?
97	C.	12.xi.36	33	?	?	?	Asth.
98	D.	30.xi.36	26	1 w.	?	?	?

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E.—*Contd.*

9. Temperament.	10. Pre-psychotic reaction.	11. Onset.	12. Exogenic factors.	13. Acute symptoms.	14. Course.	15. Present condition.
?	?	Insid.	Infl.	Cat.	Unch.	U.O.E.
?	?	?	?	,,	Decl.	W.F.N.
Ind.	Poor	Insid.	*Nil*	Heb.	,,	W.O.E.
Norm.	Good	Grad.	,,	Cat.	Unch.	U.F.E.
?	?	,,	,,	,,	Det.	W.O.N.
?	?	,,	,,	Ind.	,,	,,
Schiz.	Poor	Insid.	,,	,,	,,	,,
,,	,,	Grad.	,,	Proc. ind.	Unch.	Dead.
,,	,,	,,	,,	Heb.	Det.	W.O.N.
M.D. Schiz.	,,	Insid.	,,	Simp.	Decl.	W.O.E.
Ind.	Fair	,,	,,	,,	Unch.	U.E.E.
Schiz.	Poor	,,	,,	Ind.	Decl.	W.O.N.
?	?	?	?	Par.	Det.	,,
Norm.	Fair	Ac.	*Nil*	Cat. exc.	M.Imp.	M.I.D.E.
Schiz.	Poor	Sud.	Unempl.	Ind.	Imp.	I.D.E.
Ind.	Fair	Grad.	Tooth extr.	Cat.	Det.	W.F.N.
Norm.	,,	Sud.	Excessive work	Par.	M.Imp.	M.I.D.E.
,,	,,	,,	*Nil*	Cat.	,,	,,
Schiz.	Poor	Insid.	*Nil*	Ind.	Unch.	U.F.E.
Ind.	,,	,,	Head trauma	Par.	,,	U.D.N.T.
Schiz.	Fair	,,	*Nil*	Cat.	Imp.	I.D.N.T.
Norm.	Good	,,	,,	Par.	M.Imp.	M.I.D.N.T.
Schiz.	?	Grad.	,,	,,	Unch.	U.F.E.
,,	?	,,	,,	Cat.	Det.	Dead.
?	?	?	Kitchen work	Heb.	Imp.	I.O.E.
Schiz.	Fair	Grad.	Business failure	Ind.	,,	I.D.N.T.
Ind.	,,	,,	*Nil*	Cat. dep.	Det.	W.O.N.
,,	,,	,,	,,	Cat.	Fluct.	Dead.
Schiz.	Poor	Insid.	Blindness; Starvation	Ind.	Unch.	,,
,,	,,	Grad.	Psychog.	Heb.	Imp.	I.O.E.
?	?	?	?	Par.	Unch.	U.F.E.
Schiz.	Poor	Insid.	*Nil*	Heb.	,,	U.O.E.
?	?	Ac.	,,	Cat.	Decl.	W.O.E.
?	?	Grad.	,,	Par.	Fluct.	,,
Norm.	Fair	Sud.	Overwork	Cat. dep.	Catast.	W.O.N.
?	?	?	?	,,	Det.	Dead.
Schiz.	Fair	Ac.	Financ. worry	Par.	Fluct.	W.D.N.
,,	Foor	Insid.	?	,,	Imp.	I.D.E.
Ind.	?	Grad.	*Nil*	Ind.	Fluct.	W.O.N.
Schiz.	Poor	,,	,,	Cat. dep.	Unch.	U.D.N.
,,	,,	Insid.	,,	Heb.	Catast.	W.O.N.
,,	Fair	Ac.	Head trauma	Cat. dep.	Decl.	W.O.E.
,,	Poor	Sud.	*Nil*	Heb.	Fluct.	U.F.N.
?	?	,,	?	Par.	Det.	W.O.N.
Schiz.	Poor	Insid.	*Nil*	Simp.	Decl.	U.O.N.
,,	Fair	Grad.	Ac. append.	Cat. exc.	Imp.	M.I.D.E.
Ind.	,,	Insid.	*Nil*	Par.	Det.	W.F.N.
Schiz.	Good	Grad.	Mast.	Cat. dep.	Imp.	M.I.D.E.
?	?	?	?	Ind.	Decl.	W.O.E.
?	?	?	?	,,	Fluct.	U.D.N.

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TABLE

1. Serial No.	2. Status.	3. Date of admission.	4. Age on admission.	5. Duration of previous history.	6. Previous hospital treatment.	7. Heredity.	8. Bodily build.
99	T.	6.i.37	23	9 y.	?	*Nil*	?
100	C.	29.ii.37	..	?	?	,,	Asth.
101	C.	11.iii.37	39	?	?	,,	Ind.
102	C.	20.iv.37	33	10 y.	?	Uncle died M.H.	Asth.
103	C.	26.iv.37	34	10 y.	M.H.	*Nil*	Ath.
104	C.	25.v.37	39	6 y.	,,	,,	Ind.
105	T.	26.v.37	32	5 m.	—	Father died M.H.	?
106	C.	5.vi.37	29	5 y.	O.P.	?	Ind.
107	D.	18.vi.37	26	3 y.	M.H.	*Nil*	?
108	C.	7.vii.37	28	2 m.	M.H. (M.D.)	F.H.; Insanity mother's side	Ind.
109	T.	23.vii.37	41	3 y.	T.	Mother died M.H.	?
110	C.	11.viii.37	24	7 y.	C.	Sister in M.H., 1936	Asth.
111	C.	13.viii.37	23	6 y.	M.H.	*Nil*	?
112	T.	20.viii.37	23	4 y.	,,	Mother died M.H.	?
113	C.	21.viii.37	31	8 m.	—	Father d. del. insan.; mother d. mania	Asth.
114	C.	3.ix.37	26	1 y.	?	Brother died T.B.	Ath.
115	T.	28.ix.37	26	18 m.	Obs.	*Nil*	?
116	D.	29.ix.37	30	18 m.	O.P.	Grandmother M.H.	Ind.
117	C.	15.x.37	21	18 m.	M.H.	*Nil*	Asth.
118	C.	18.x.37	32	6 m.	?	2 siblings T.B.	,,
119	C.	10.xi.37	29	3 y.	?	Brother in M.H.	Ind.
120	C.	25.xi.37	38	?	M.H. (V.)	?	Asth.

C. = Certified case still in Cane Hill Mental Hospital.
V. = Voluntary patient still in Cane Hill Mental Hospital.
T. = Transferred to another mental hospital.
D. = Discharged.
d. = Days.
w. = Weeks.
m. = Months.
y. = Years.
M.H. (R.) = Readmitted to a mental hospital but now relapsed.
M.H. = Previously resident in a mental hospital.
M.H. (c.) = Clinic (cf. Maudsley Hospital).
M.H. (V.) = Previously resident in a mental hospital as a voluntary patient.
O.P. = Out-patient Department treatment.
M.H. = Mental hospital.
T.B. = Tuberculosis.

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E.—*Contd.*

9. Temperament.	10. Pre-psychotic reaction.	11. Onset.	12. Exogenic factors.	13. Acute symptoms.	14. Course.	15. Present condition.
Schiz.	Poor	Insid.	*Nil*	Ind.	Unch.	U.O.E.
,,	,,	,,	,,	Cat.	,,	,,
M.D. Ind.	Fair	Grad.	,,	Par.	Det.	W.O.N.
Norm.	Good	Insid.	Mental stress	,,	Decl.	W.F.E.
?	?	,,	*Nil*	,,	,,	,,
Schiz.	Poor	,,	,,	Cat.	,,	W.O.E.
,,	Fair	Sud.	Surg. op.	Par.	,,	,,
?	?	Insid.	?	Ind.	Unch.	U.F.E.
?	Fair	Grad.	*Nil*	,,	Imp.	I.D.N.T.
M.D. Psycho-path.	Poor	,,	,,	Proc. heb.	Unch.	U.O.N.
Norm.	Good	,,	,,	Par.	,,	U.O.E.
Schiz.	Poor	,,	Head trauma	Proc. heb.	Det.	W.O.N.
M.D. Schiz.	,,	Insid.	*Nil*	Ind.	Unch.	U.F.E.
Schiz.	,,	Grad.	,,	Simp.	Fluct.	,,
—	?	?	?	Ind.	Decl.	W.O.E.
Schiz.	Poor	Insid.	*Nil*	Cat.	,,	W.O.N.
Ind.	Fair	Grad.	,,	Par.	Imp.	I.D.E.
Schiz.	,,	,,	,,	,,	Unch.	U.D.N.
Ind.	,,	Insid.	,,	Simp.	Det.	W.O.N.
,,	,,	Sud.	,,	Cat. dep.	,,	W.O.E.
?	?	Grad.	?	Cat.	Unch.	U.O.N.
Norm.	Fair	?	?	Par.	,,	U.F.E.

d. = Died.
Pyk. = Pyknic.
Ind. = Indeterminate.
Norm. = Normal.
Cycl. = Cycloid.
Schiz. = Schizoid.
Ac. = Acute.
Sud. = Sudden.
Cat. = Catatonia.
Cat. exc. = Catatonic excitement.
Cat. dep. = Catatonic depression.
M.I., M.Imp., I. Imp., see text.
U. or Unch. = Unchanging or Unchanged.
Decl. = Declining.

Ath. = Athletic.
Asth. = Asthenic.
Grad. = Gradual.
Insid. = Insidious.
Mast. = Masturbation.
Unempl. = Unemployment.
Surg. op. = Surgical operation.
Psychog. = Psychogenesis.
Heb. = Hebephrenic.
Par. = Paranoid.
Proc. = Process symptoms present.
Fluct. = Fluctuating.
Det. = Deteriorating.
Catast. = Catastrophic.

For explanation see text.

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(6) *Exogenic factors.*

Such mental and physical factors of this nature as might be of significance were noted specifically for each case.

(7) *Symptoms of the acute stage.*

The usual subdivision into the simple, hebephrenic, catatonic and paranoidal groups is maintained, but added to these is the indeterminate group into which many cases fall.

(8) *Course of disease.*

The course of the disease was labelled according to its progress from the time of admission onwards and graded into the following categories: much improved, improved, unchanged, declining, deteriorating, catastrophic, and fluctuating.

Much improved, Improved } Used in the sense already defined in the text (p. 403).

Unchanged = mental condition neither improves nor declines; remains materially unchanged since admission.

Declining = a gradual insidious downhill course to dementia.

Deteriorating = a steady and rapid degeneration.

Catastrophic = an abruptly rapid downhill course to degeneration and vegetation.

Fluctuating = showing alternating improvement and relapse.

(9) *Present condition.*

Three columns of symbolic capital letters are used. The first letter of each trio tells the mental condition of the patient relative to that at the time of admission (M.I. = much improved, I. = improved, U. = unchanged or unimproved, W. = worse). The second letter indicates what type of abode the patient now occupies (D. = discharged home, O. = observation ward, F. = non-observation ward). The third states whether the patient is employed or not, no grading to indicate efficiency at employment being used (E. = employed and N. = unemployed).

It is to be noted that several of the group graded "improved" (five, to be precise) are still in the hospital. These patients are doing useful work here, and would be fit to go home were it not for the fact that their homes do not provide the shelter and care required.

Table E reveals the position regarding the above factors, for each individual case and for the material as a whole. To establish what I have previously contested the following questions must be answered:

(i) Are there any general features which might lead one to anticipate the very poor collective results?

(ii) Are there any individual cases whose course, bearing the picture of their traits as a whole in mind, is the opposite to what one might expect it to have been, and if so, why ?

Collectively we have the following distributions :

TABLE F.

Age on Admission (all periods inclusive).

20 and under.	21–25.	26–30.	31–35.	36–40.	41–45.
17	31	35	27	9	1

Duration of Psychosis Prior to Admission.

Under 7 days.	Under 1 month.	2–6 months.	7–12 months.	1–2 years.	3–5 years.	6–10 years.	Above 10 years.	Not known.
3	10	15	12	24	23	14	2	19

Previous Mental Treatment.

In a mental hospital.	In a clinic.	At out-patients.
29	9	8

Heredity.

35 cases had a positive hereditary history of psychosis.
13 ,, ,, ,, ,, ,, tuberculosis.

Bodily build.

Asthenic.	Athletic.	Pyknic.	Indeterminate.
30	9	2	25

Temperament.

Schizoid.	Cycloid.	Indeterminate.	Normal.	Psychopathic.
45	1	16	16	2

Pre-psychotic Reaction.

Poor.	Fair.	Good.
29	41	9

Mode of Onset.

Insidious.	Gradual.	Sudden.	Acute.
21	51	12	7

Exogenic Factors.

Of some sort were present in 36 cases.

Type of Acute Manifestation.

Paranoid.	Catatonic.	Hebephrenic.	Simple.	Indeterminate.
28	35	19	7	28

A survey of these figures alone would convince one of the bad prognosis of the material being treated. The comparatively large proportion of cases with an age of over 30, a pre-psychotic history of over two years' duration, an asthenic build, a schizoid temperament, a poor pre-psychotic reaction, a slow onset, hebephrenic, paranoid and simple group symptoms, a definite hereditary factor, and a previous history of mental treatment, and the comparatively low proportion of cases with a young age, a pyknic build, a cycloid temperament, a good pre-psychotic reaction and a rapid or acute onset, all point to this conclusion. But these symptoms could not in themselves indicate the serious nature of things, and it is only when the picture of the individual cases is before one (as in Table E, p. 438) that this is fully realized.

An inspection of this table reveals that the final outcome in the individual cases is usually what one would expect from the broader prognostic factors available. There are certain cases of discrepancy, however, and these will now each be reviewed in greater detail, in a search for an explanation of the unexpected outcome of each case.

Cases in which Prognostic Indications were Somewhat Indefinite.

(*a*) Cases in which Progress was Favourable.

Case 7.—The features shown in Table E indicate possibilities of a favourable outcome. Further details enhance these chances; his young age, the short duration and complete recovery of his only previous sojourn in a mental hospital; his average intelligence and reasonable acquittal at his employment (especially during his re-employment following his previous mental attack when his ability indicated a return of ambition and interest), and the sudden and almost acute onset of his present attack, all point to a favourable outcome, as also do the absence of any hereditary factor, or a schizoid temperament. The outcome, therefore, is not surprising.

Case 9.—This was rather a low-grade imbecile. He had been in an institution for the mentally defective for the 18 months prior to admission here when he had a gradual onset of catatonia, exhibiting flexibilitas cerea, echolalia, echopraxia, delusions and hallucinations. These cleared up soon after admission, but he remained in a semi-stuporose state with grinning and grimacing and outbursts of mischievous impulsiveness. By April, 1934 (nine months after admission), he was in a semi-stuporose condition, and he was granted discharge under Section 79 in the care of his father one year after his admission. From the meagre past history obtainable, the outcome of discharge without improvement was not unexpected.

Case 10.—Details of this patient were very deficient. His mother died from tuberculosis. It was also known that he was an illegitimate child. As far as could be ascertained the onset was acute, but this was not certain. At the time of admission he was confused, and soon after went into a catatonic stupor. In view of these all too insufficient data improvement was not unlooked for.

Case 11.—Again only a very imperfect history was available, and very little can be gauged from it. The fact that he had previously been in a mental hospital in Australia and apparently effected a recovery was a favourable indication. His asthenic build was an unfavourable factor. His changeable course was not surprising, and the fact that he was graded as in a state of improvement on 31.xii.38 does not blind one to his almost certain early relapse.

Case 21.—This was the case of a young man of 20 years, the son of a doctor, and a medical student himself. He seems to have ailed considerably from various

illnesses during childhood, and always to have been difficult to manage. There was a hereditary factor and he had a schizoid temperament, an apparently asthenic build (judging from a photograph) and an insidious onset—all unfavourable omens. On the other hand, he was young; the duration of his psychosis had been only one year; he had worked quite well at medicine, and had a fairly good pre-psychotic reaction, and although the onset had been insidious, it had ended in a sudden acute flare-up into a state of catatonic excitement. His symptoms were very typically catatonic, and cleared up in that rare and abrupt manner described in the literature from time to time. We see then that the outcome was not surprising, although a persistence of catatonia might have been equally well expected.

CASE 30.—It is obvious from an examination of Table E that apart from the presence of a hereditary factor of doubtful significance, the characteristics point to a favourable outcome. A young patient with a short history, a normal temperament, a fair pre-psychotic reaction and lack of food as a precipitatory cause. It is worthy of remark that this patient was a mental defective, but this did not prevent his being recorded as much improved, which implied that his illness regressed to such an extent as to leave his personality, even if a poor one, functioning in its normal manner.

CASE 32.—Although still at home in an improved state, this case has only attained a poor grade of improvement, having been able to do no more than casual work since discharge (he was in employment on 31.xii.38; apart from this he sits about the house). This outcome is not contrary to prognostic indications.

CASE 40.—The young age of this patient, his rapid recovery from a previous attack, normal temperament, fair pre-psychotic reaction and acute onset of the present attack would lead one to expect a good prognosis, although the hebephrenic nature of the acute phase was, of course, a pointer in the other direction. The strong battery of favourable factors have so far prevailed. It would be interesting to see the final picture.

CASE 69.—Despite the ill omen of the patient's schizoid temperament, his age at onset (32 years old), and the insidious incidence of the psychosis, his fair pre-psychotic abilities to face the world, short duration of symptoms and catatonic acute manifestation were of a sufficiently favourable significance to render the patient's improvement a distinct prognostic likelihood. It is unfortunate that he is now untraced, as the ultimate prognosis is not so good as the immediate one, and it would be interesting to know what has happened to him.

CASE 70.—This case might on the surface of things have been thought to do badly because of his age, the long duration of his psychosis, and the paranoid nature of his symptoms. It is found on further investigation, however, that the patient was a physician of a normal temperament and quite good pre-psychotic reaction history; that he had some sexual difficulties with his wife which may have helped on the present trouble; that although the psychosis began eight years previously it had been episodic as opposed to continuous, despite its originally having crept on in an insidious manner; accordingly, a favourable outcome was far from contra-indicated.

CASE 78.—The outlook in this case was from a prognostic point of view unfavourable in every way: long history of psychotic symptoms before admission, marked hereditary factor, schizoid temperament, poor pre-psychotic reaction, gradual onset and hebephrenic symptomatology render the prognostic outlook very dull. His grading as improved is indeed an extremely generous one on my part, since although he is well behaved, clean, tidy and regularly employed at the occupational therapy centre in simple work, he was still very dull and largely self-absorbed, not always accurate in his reply to questions, and subject to neologisms. His ability to survive in the outside world in an employed capacity, even if the surroundings were very favourable, is, to say the least of it, questionable. It is to be noted that he was still in an observation ward on 31.xii.38. There are one or two other cases of improvement in a somewhat similar category, but all showing a more substantial improvement than the present case.

CASE 85.—This patient had a schizoid temperament and a poor personality at its best. He was probably of a homosexual disposition, and this and financial worries proved exogenic factors in his history. His prepsychotic reactions were fair and the onset of the illness was acute. It is not surprising really then that a verdict of " improved " was returned, since this was, of course, reached bearing in mind the patient's usual personality and comparing his condition with that.

CASE 86.—This was of the same type as Case 85. The patient was a mental defective with a poor type of personality who has attained a poor grade of improvement, symptoms still being present. The result is not altogether surprising, although a failure to have improved was more to have been expected.

CASE 94.—This patient had a schizoid temperament and had always been sensitive to the difficulties and setbacks in life. He had done well at school reaching Standard VII at the age of 13. After that he had been an iron moulder first and a general labourer subsequently. His first breakdown had occurred at the age of 22, when he had suffered from what was said to be loss of memory, necessitating his stay in a general hospital for 18 weeks. In actual fact this may have been an attack of catatonic stupor. This was rendered even more probable by the fact that at the end of this time he became extremely excitable and had to go to a mental hospital. He was there for seven weeks, staging thereafter what appeared to be a complete recovery. Despite unemployment on his discharge he remained apparently well and eventually got a good job as a barman. Unfortunately, six weeks later he got acute appendicitis, necessitating an operation, and during convalescence had the present attack of schizophrenia, again of a catatonic type. That such a catatonic case, with a previous history of an attack from which a recovery was made and an acute recurrence following acute appendicitis on the present occasion, should once more improve sufficiently for discharge was to be anticipated. Since discharge he is reported to have been his usual self once more and to be at a Bristol training centre acquiring a training for a new trade.

CASE 96.—Although this patient had a schizoid temperament, his pre-psychotic reactions were apparently quite good and he had been for as long as seven years in one job as an engineer's fitter. The onset was gradual, having commenced twelve months before admission, with a falling-off of general interest and initiative. It launched into a stage of catatonic excitement quite suddenly at the end of this period. He soon veered over to catatonic depression. The strong affective portion of his catatonic symptoms combined with the fact that he did not develop stereotypies was also significant. All these facts suggested the possibility of a favourable outcome, which was more than justified by his subsequent history.

CASE 107.—The information obtained in this case was not very satisfactory. However, his prepsychotic history seemed quite good, as he worked from the age of 14 to that of 23, when he had his first breakdown in the General Post Office, having obtained the position of sorting-out clerk. The onset of his first attack in August, 1934, was reported to have been acute and of only one week's duration before admission. The symptoms were of an indefinite nature (as they were on the present occasion), and after rapid improvement followed by a relapse he improved again to be discharged finally in May, 1935. After that he appears to have remained " recovered " until the onset of this attack, which occurred quite acutely ten days prior to admission. From what was known, then, improvement was really more probable than not.

CASE 115.—The patient had a temperament of an indeterminate type which, although it had suspicious traits, could not be definitely labelled as schizoid. His pre-psychotic history seemed fairly good. He was a good boxer, made friends quite easily and appeared cheerful and lively to his family. They had never noticed anything abnormal in him until two years prior to admission when, following the death of his father, he became worried and more moody. His history following this is one which would fit in well with increasing paranoid ideas. He changed his employment frequently, was in Fulham observation ward twelve months prior to admission following arrest by the police for loitering: nine months prior to admission was arrested for knocking someone down in the street. On the present occasion

he was taken by the police for breaking telephones in kiosks. On admission he had delusions and hallucinations of persecution, but comparatively little emotional dissociation was noted, and there was little deterioration or degradation of the personality as a whole. The absence of schizoid temperament, the presence of a fairly good prepsychotic reaction and the relatively good preservation of the affective side of his personality were favourable points which put the possibility of improvement definitely in the forefront.

Progress was Unfavourable.

(*b*) Cases Whose Course Belied Prognostically Favourable Indications.

Case 17.—The patient was a merchant ship's officer who had had a brilliant school record, having obtained a scholarship at the age of 11 and the London Matriculation at 16. His temperament seems to have been normal and his pre-psychotic reactions good. His bodily build was indeterminate, approaching the asthenic type more than the pyknic. There was a family history of one aunt having died in a mental hospital after being there for many years. While at sea he had had malaria and dengue fever, but these had not seemed to affect him. In February, 1929, he had influenza, after which he was reported to have been never the same. During his voyage from February to June, 1929, he is said to have had a head injury which affected him detrimentally. After his return home on this occasion he never returned to sea. From that time on his schizophrenia gradually developed. He was a voluntary in-patient in the Maudsley Hospital for 13 months in 1929–30; he discharged himself, but his condition had not improved. In 1932–33 he was a certified patient in this hospital for two months, diagnosed as manic-depressive psychosis and discharged, primarily on trial and subsequently as "recovered." His normal behaviour did not last for long, however, and he developed typical schizophrenic traits and was readmitted six months after his discharge.

It might have been thought from the patient's age at onset, his temperament, intelligence and prepsychotic reaction and the fact that influenza was a precipitating cause that the outlook was favourable, but the hereditary taint and the history of serious head trauma pointed in the other direction. Weighing things up, one would probably have given a quite good, if guarded, prognosis at the onset of the trouble; but by the time he came here with a four years' more or less progressive history, the prospects of improvement were poor and his present condition was the most likely outcome. The importance of head trauma as a detrimental factor in such cases is to be noted (see Mapother, 1937).

Case 24.—The patient would seem from his normal temperament and good prepsychotic reactions to be a candidate for improvement. He was a cheerful and hopeful person who had been employed at one time as a plumber, another as a pawnbroker's assistant and a third as a wireless operator. In the last capacity he had travelled all over the world. He married at the age of 23 and had had two children. Prior to the onset of his illness he had been a good father and husband. So far the omens appear favourable, but his age on admission (34), the long previous duration of his psychosis (3½ years) and the paranoid type of its manifestation prove a sufficiently adequate counterbalance to warrant a very guarded prognosis. Thus his discharge in a fundamentally unchanged state on 28.i.37 was to be considered as quite a likely outcome. Since then he has remained at home, still deluded and hallucinated and sometimes noisy and shouting. He manages to do all the housework, but has not been able to accept any other employment.

Case 28.—This was a very interesting case. He was the youngest of ten children, two by his father's first wife, and eight by his own mother. One of the two by the first wife had died from tuberculosis when a boy. There was no family history of insanity. The patient had done very well at school and had won a trade scholarship to the Arts and Crafts school. He became a compositor by trade, and

was in one post for four years prior to the present illness. He married three years before admission and had two children. He was very kind and good to his wife and was very sociable and had many friends. On the other hand, he was reported to have always been wasteful with money and very self-willed. Eighteen months before admission he lost his job owing to slackness and inability to concentrate. These were the first symptoms of his illness, but from then onwards his character gradually seemed to change completely. He became cruel to his wife and knocked her about. At the time of the birth of his second child (eight months old at the time of his admission) he did not get anyone to look after his wife or cook for her, but, on the contrary, made her get up and cook for herself and him as well. Despite this he celebrated the birth of the child lavishly. He was noticed to sit about all day and laugh to himself, no adequate external cause being present. He stated that he was not going to work, since he got his food and lodging without doing so. He also became a heavy drinker. On 4.iii.34 he attempted to kiss a girl against her will and was arrested by the police; he was sent by them to the observation ward and thence on here.

The patient was admitted in a state of typical hebephrenic schizophrenia; emotionally he was dissociated and full of the most fantastic and bizarre delusions and hallucinations. He deteriorated with catastrophic rapidity and on 31.xii.38 was completely inaccessible, keeping up a flow of absolutely unintelligible and disconnected language. His habits were faulty and his behaviour infantile. He was completely out of touch with reality.

The importance of this history lies in the fact that had the patient been seen in the early days of his psychosis (or even, possibly, at admission), from the factors already mentioned, a good prognosis would have had to have been given. What a precisely opposite course the symptoms took to what one would have expected is obvious. On 31.xii.38 no explanation could be given for this prognostic contrariness, but since then the patient has died and a feature discovered at post-mortem examination which is probably the explanation of the unforeseen outcome in his case, namely, the very small size of the patient's heart. The ominous significance of small-sized hearts was recorded by Lewis (1923), and it is well to bear in mind in cases such as the present one, when prognostic indications are falsified, that such an unexpected influence may be at work.

CASE 52.—On the surface the prognosis in this case looked good. He was the third child of a family of four, in which there was no hereditary factor. He did very well at elementary school and won a scholarship to a polytechnic, where he continued to excel. He was bright, friendly and sociable; even tempered, diligent and ambitious; fond of games and a good athlete. He had been friendly with a girl at one time, but for a considerable period prior to admission had taken no interest in her or any other girl. His pre-psychotic reactions had ostensibly been good until at 17½ years he left school. Owing to the industrial slump then prevailing he was unable to get work, and this disappointed his ambitions to get a good job and help his parents financially. This produced a reaction in him, and he started talking about having obtained a job and boasting to friends about it. Although he attended the Maudsley Hospital his condition progressed, and on 31.xii.34 the patient was admitted to Cane Hill in a state of catatonia, and from then onwards has not shown any signs of a recession of the disease process. A portent of misfavour is the patient's bodily build, which is the tall, thin, short trunk, long limbed, asthenic type. Despite this, one must admit that this was a case in which there seemed grounds to pronounce a good prognosis, and this has to be rated as one of those cases in which prognostic assessment was falsified by the subsequent course of the disease for reasons as yet unknown.

CASE 75.—The onset of schizophrenia in a man of 38 is always to be considered serious, so that the deteriorating subsequent course was to be looked for.

CASE 83.—The outlook in this case appears quite good in many respects. He was a married man with three children who had been a good husband and father. He had done normally well at school and at work he always had a good record. He had

been an errand-boy from 14 to 15 years old, worked in the Woolwich Arsenal from 15 to 18, and then joined the R.A.F. and became a first-class mechanic. Following the war he had been a lorry driver, and for the five years prior to this illness had been employed by one firm, earning £3 17*s.* a week. His personality was described by the social worker thus: "A well-liked, pleasant fellow; not a leader but quiet and reserved. Is unselfish, a good husband and father and takes a pride in his home and family. Steady and even-tempered and never appeared to worry over things. Very neat and tidy in habits and careful of his appearance. Rather 'fussy' with food. Went to the 'pub' very occasionally but was usually at home in his spare time." His wife attributed his breakdown to the adequate cause of overwork. He was particularly hard worked immediately before the onset of the psychosis, frequently working from 6 or 7 a.m. to 12 midnight. Over and above this, the acute symptoms were those of catatonia, so that so far the picture as a whole looks good.

Looking in the other direction, however, we find two unfavourable factors: the age of the patient at the time of onset and the hereditary factor. The patient was the fourth of five children, all boys. The youngest brother from all accounts had a schizoid temperament. He died in a mental hospital at the age of 23 (almost certainly from dementia praecox). The patient's father had died at the age of 40 from tuberculosis said to be brought on by excessive drinking.

Thus considering the case as a whole, we may say that prognostically the outlook was indeterminate. The catastrophic deterioration of the patient was not definitely indicated, but the strong hereditary factor may be said to have prepared in the patient what the biological school would call a "milieu" particularly susceptible to the schizophrenic disease process, and from their point of view at least the downhill progress was not surprising.

CASE 109.—This is another case of schizophrenia of the paranoid type developing late and with a poor prognosis despite the previous normal temperament and quite good prepsychotic reaction. The fact that the patient's mother died in a mental hospital was another adverse factor. Therefore the typical gradually increasing deterioration which occurred was more to be expected than not.

CONCLUSION.

In concluding this katamnesic follow-up of 120 cases I shall summarize my findings thus:

(1) It was found that the outlook for the 120 patients followed up for periods varying from one to six years after admission to the hospital was very gloomy. Only eight cases (6 per cent.) were "much improved," and 11 (9·1 per cent.) "improved."

(2) Examination of the details of certain prognostic factors from a general point of view pointed to the above possibility, and this was confirmed beyond doubt by a study of individual cases.

(3) The outcome in the individual cases was as would have been expected from the prognostic facts except for one or two cases, and in only two instances was it absolutely contrary to expectations. In one of these the solution was found at post-mortem to be a small heart.

(4) The above facts support my contention that certain factors are of value in assessing prognosis in the individual case, and that in attempting to estimate the potentialities of various treatments of schizophrenia, adequate details regarding the prognosis of the various cases treated are essential. The

production of so-called statistical figures of remission rates obtained by such treatments without such prognostic qualifications is misleading and comparatively useless.

PART III.

Prognosis in Cardiazol Treatment.

It is not the purpose of this thesis to enter into a disquisition on the therapeutic potentialities of cardiazol and insulin in the treatment of schizophrenia. The virtues of each were well vaunted by their original sponsors, and from that time onwards a continuous glut of articles supporting or controverting these claims has flooded medical and psychiatric literature. It is not intended here to conduct a detailed survey of all that has been written on this subject; suffice it to say that the matter is still under dispute with regard to both treatments, and to examine the present state of opinion concerning them.

There has been a tendency for each of these treatments to follow the course common to many previously-claimed remedies for schizophrenia, such as continuous narcosis, sulfosin, pyrifer, thyroid, etc. Each of these in turn has been hailed with a great initial enthusiasm, which has gradually dwindled with time until it has finally been abandoned and relegated to the waste-heap of disappointments. Both cardiazol and insulin have gone through the initial stages of this process, having already received almost fanatical support by some and prejudiced scepticism by others. The final verdict has not yet been reached, but what may be said is that the original claims are now considered by general opinion as excessive.

One of the main reasons for the inability to reach a verdict has been the differing criteria of recovery and improvement adopted by different authorities, but the factor of greatest importance has been the failure to compare the results of treatment with prognostically comparable groups of cases treated by the usual hospital methods of rest, occupation, etc. As already mentioned, it is because of the variance of opinion regarding the remission rates of cases treated in the latter manner that there has been no real yard-staff against which to measure the effects of these treatments. Apart from the average remission rates, there is also the question of the prognostic features of the individual case, and here again there is lack of agreement on the importance of the various features concerned. Nevertheless, as already shown, there seems good ground to believe that taken as a whole the prospects of one case may be considerably better than another, and consequently the necessity for comparing comparatively favourable cases is obvious. As Hinsie (1928) remarked: "To be in a position to judge the efficacy of any mode of treatment at least the following requirements should be met—a tolerable uniformity in the general personality constitution, but this should not be construed too rigidly."

Cardiazol Treatment.

The production of artificial convulsions by the intravenous injection of cardiazol was first introduced by Meduna (1935). He claimed as many as 90 per cent. of remissions in cases of under one year's duration of symptoms.

Fig. 34*c* represents the results obtained by a few authors who treated over 40 cases in the earlier days of the use of this drug.

Fig. 34.—*Cardiazol.*

Author.	Total number of cases.	Duration of psychosis.	Results. Number of remissions.	Number of non-remissions.
Meduna, L. (1937)	110	Under 1 year	39 (90%)	4
		1 to 2 years	9 (50%)	9
		2 to 5 years	6 (35%)	17
		Over 5 years	..	26
			54 (50%)	56
Cook, L. C. (1938)	45	Under 1 year	7 (77·7%)	2
		1 to 2 years	6 (60%)	4
		Over 2 years	11 (42·3%)	15
			24 (53·3%)	21
Angyal and Gyarfas (1936)	45	Under 1 year	12 (44·4%)	15
		Over 1 year	5 (27%)	13
			17 (36·7%)	28
Low *et al.* (1938)	43	Under 1 year	5 (38·4%)	8
		1 to 2 years	1 (10%)	9
		Over 2 years	2 (10%)	18
			8 (18·6%)	35
Briner (1937)	112	Under 1 year	20 (58%)	14
		Over 1 year	8 (10·2%)	70
			28 (33%)	84
Kuppers (1937)	262	Under 1 year	59%	Number of cases not stated.
		Over 2 years	2% (full remissions)	

Recently various articles have appeared summarizing the results in large numbers of cases. Von Meduna and Friedman (1939) reviewed the results obtained by various psychiatrists in both the United States and in Europe. The total number of cases dealt with was 2,937, of whom 1,465 came from the U.S.A. and 1,472 from Europe. Their results are represented in Fig. 35.

Reitmann (1939) in a recent article points out the difficulties met with in trying to correlate the results of various authors. He says: "The various authors classify their results so differently that it is very difficult to use them as a homogeneous group in which the results can be tabulated. . . . Some of the authors for example report the number of acute, subacute and chronic cases, but do not say what their therapeutic results in the separate groups (acute, subacute and chronic) have been. Other authors again represent only percentages. . . . The classification of the remissions is rather loose—e.g. the very relative notion of social remission or very good improvement is used." As seen in Fig. 36, he confines himself to the percentage remissions in acute and subacute cases (i.e. under 18 months' illness), and finds a 50 per cent. full remission rate.

Pollock (1939) has very recently compared statistically the results of cardiazol and insulin with cases treated by the routine methods in what he says are strictly comparable groups of 1,140 patients, and finds the results of cardiazol treatment much inferior to those of insulin, and very little better than cases not treated with either.

FIG. 35.—*Table summarizing the Collective Findings of von Meduna and Friedman* (1939).

Total number of cases	2,937
,, ,, of full remissions	737 (250)

U.S.A.—1,465 *cases.*

	Number of cases.	Remissions.	Improvements.
Under 6 months	201	128 (60·55%)	42 (20%)
6 to 12 months	210	74 (36·8%)	47 (23·13%)
Over 1 year	1054	88 (8·36%)	398 (37·7%)

Europe—1,472 *cases:*

Full remissions	30·37%
Acute and subacute (i.e. less than 18 months' duration)	584
Of these there were 290 remissions	49·66%

FIG. 36.—*Taken from Reitmann's Article on Collective Cardiazol Results* (1939).

Nation.	Number of cases. Total.	Less than 18 months (acute and subacute).	Full remissions.
Austria	130	64	32 (50%)
England	71	31	13 (41%)
Germany	310	129	51 (39%)
Hungary	433	178	94 (53%)
Italy	120	53	42 (79%)
Switzerland	162	51	22 (43%)
U.S.A.	785	334	183 (54%)
Total	2,011	840	437 (51%)

In the absence of any definite criterion against which to measure the claims of cardiazol and insulin, various methods of obtaining valid comparisons have been suggested. It is interesting to note the recommendations of Isabel Wilson (1937). In an article headed, "Some Control Observations should be made," she says:

"The question bristles with difficulty . . . , but I believe something of the sort should be tried. (1) The method of giving insulin only to every alternate schizophrenic admitted suggests itself, but useful comparison is only possible over large numbers, so that this plan would be very tedious. (2) Treatment of female patients only would be interesting in view of opinions expressed upon this, but even if they improved significantly in comparison with male untreated cases we would be left, after long work, with a sex-weighted result. (3) The least objectionable plan might be for as many patients to be treated as possible in the treatment hospital, while an equal number of cases diagnosed by the same doctors were given conditions and treatment, except that they were not given insulin, as like that given to the insulin-treated group as possible. Care should be taken that the number of 'early' cases in both groups should be approximately equal. Such investigations would admittedly bring us no exact result, but might help us to form ideas on the real efficacy of insulin therapy."

All three of these methods have one paramount objection which, since none of them was applied in the earlier days, has rendered then inapplicable later. This is the fact that the treatments have received such general recognition as therapeutic agents that psychiatrists have been loth to withhold one or the other to cases who did not rapidly show progress under routine hospital treatment; and even if *they* had no scruples on this point, the public have

received such information on the subject as more often than not to demand one of them for their relatives. We are left, therefore, with the only alternative of comparing results with those of previously hospitalized cases. In this respect Freudenberg (1938) has argued that each hospital should compare its results with previous results of its own ; but the labour and difficulty of this plan are frequently great and, it is hoped, may be avoided by resort to the figures and conclusions already reached in this thesis. The comparison of cardiazol and insulin results with those of the cases treated by the usual hospitalization, and which I have reviewed earlier, will now be discussed.

It will be seen from the above figures that the best results are obtained in the earliest cases, and that the fall in effect with increased duration of psychosis is phenomenal. A comparison according to duration of psychosis between cardiazol, insulin and hospitalized cases is very interesting. The latter are represented by the works of Briner, O. (1937), Guttmann *et al.* (1939), Hunt, Fieldman and Fiero (1938), Pollock (1925) and Whitehead (1937).

It is seen that the cardiazol figures are definitely superior to those of hospitalized cases, but on close inspection are not so much so as at first seems to be the case. This is due partly to the fact that the cases treated by cardiazol cannot possibly have been followed up for so long as those of the other series, and partly to the possible discrepancies in duration of illness, and proportions of the various sub-types of cases, etc., in each of the groups of different authors. As an example of the second contingency, it is obvious that in groups of, say, 50 cases of under six months' duration of history, the scatter may vary tremendously, some groups having the largest proportion with a history of under two months, others with that of over four months. These facts have not been dealt with in sufficient detail in the various articles concerned. Apart from the duration of history, the usual absence of details of other prognostic factors influencing expectation of recovery renders the matter even more inconclusive. (To appreciate the importance of the former factor, reference should be made to Figs. 23, 27, 30, and to Table V.)

Even if the effect of such factors is disregarded, it is seen that there is a large divergence of results. For instance, Guttmann *et al.*'s figure of 34·7 per cent. complete and social remissions over a period of two to five years in 188 cases of one year's duration compares favourably with Low *et al.*'s (1938) figure of 38·4 per cent., and not unfavourably with Angyal and Gyarfas's figure of 44·4 per cent., and von Meduna and Friedman's figure of 36·8 per cent. for American cases of six months' to one year's duration. Briner, O.'s, figure compares even more favourably with the majority of cardiazol figures, including von Meduna's and Friedman's American cases of under six months' duration. Klaesi's (1937) claim of 60 per cent. of social remissions in cases treated without cardiazol or insulin is also noteworthy.

Pollock (1939) sounds a note of complete disharmony, as revealed by Fig. 37, and reaches the conclusion that cardiazol treatment results do not warrant its

use in the U.S.A. state hospitals. Others voice of scepticism have recently been added, amongst whom the following may be quoted: Gillman and Parfitt (1938) produce evidence to show that the antagonism of schizophrenia and epilepsy is far from proved, and that fits produced in insulin treatment and by cardiazol "do not affect the ultimate prognosis in schizophrenia and at the most only accelerate expected recoveries." Stalker, Millar and Jacobs (1938), after a comparative study of 218 cases, of whom 48 were treated with insulin and 41 with cardiazol, state: "There is no significant difference in the numerical results obtained in schizophrenia by ordinary hospital treatment, hypoglycaemic treatment and convulsant treatment." The latter opinion is further confirmed from Hungary, where Lehoczky, Horanyi *et al.* (1939) examined cases of schizophrenia from one to four years after treatment. In 132 untreated cases they found a remission rate (full and good remissions) of 35 per cent., whereas in 85 treated with insulin they found only a 30·6 per cent. rate, and in 50 cases treated with cardiazol one of only 22·8 per cent. They therefore conclude that cases treated by these methods have an outlook no better than those not so treated.

FIG. 37.—*Results of Cardiazol and Insulin Treatments compared with a Control Group of* 1,140 *Cases (after Pollock)*

	Rec.	M.I.	Imp.	Unimp.	Dead.
Control group	11·2	7·4	7·5	65·8	4·6
Insulin	12·9	27·1	25·3	33·4	1·3
Metrazol (= cardiazol)	1·6	9·9	24·5	63·5	0·5

Apart from these reports the question of complications has come increasingly to the fore. Tooth and Blackburn (1939) have shown that intellectual impairment as evidenced especially by memory defects may be produced by convulsion therapy. In early works complications of any consequence were considered to be very rare. Thus such works as those of Meduna (1935), Cook, L. C. (1938), Kennedy (1937) and Harris (1938), and Rees Thomas and Wilson (1938) make only cursory mention of the subject and all concluded that serious complications are rare. A survey of recent literature does not bear this out, however, but on the contrary shows that serious complications may be considered quite frequent. The most important of these is fracture of the vertebrae, which was previously unsuspected, but has now been revealed by X-ray of the spine (Fig. 39). I have had five such fractures in X-rays of 20 cases treated with cardiazol. I have also seen two cases of double fracture of the femur and two of single fracture in the course of treatment of 120 cases. One of these cases died following an operation. Fig. 38 represents a table of such fractures recorded in the literature. Fig. 40 represents fractures of

other bones noted in the literature. Apart from fractures, these other serious types of complication occur: (1) lung abscess, (2) pneumonia, (3) a lighting up of latent tuberculosis, (4) various cardiac arrythmias. I myself have seen one case of (3) who died within the course of six weeks.

FIG. 38.—*Representing the Frequency of Fractures of the Femur in Schizophrenics Treated by Cardiazol or Triazol Convulsions.*

Author.	Number of cases.	Unilateral.	Bilateral.	Fatal.
Kerstens (1938)	Not mentioned	0	1	..
Pameijer, J. H. (1938)	1,200	2	3	..
Nightingale, G. (1938)	44	1	0	..
Goldstein *et al.* (1938)	102	1	0	..
Walk, A., and Mayer Gross (1938)	61	1	1	1
Beckenstein, N. (1939)	695	2	0	1
Pollock, H. M. (1939)	1,140	5	0	..
Bellinger, C. H. (1939)	538	1	0	1
Hamsa, W. R., and Bennett (1939)	..	4	..	..
Carp, Louis (1939)	687	5	..	..
Somers and Richardson (1939)	1	0	1	..
Myself	95	1	1	..
	4,563	23	7	3

= ·66%.

FIG. 39.—*Representing the Frequency of Fractures of the Vertebrae Produced by Cardiazol or Triazol Convulsions.*

Author.	Number of cases.	Number X-rayed.	Number of fractures.
Carp, Louis (1939)	687	?	2
Bennett and Fitzpatrick (1939)	17	8	8
Polatin, Friedman *et al.* (1939)	58	51	22
Wespi, H. (1938)	?	?	1
Palmer, H. A. (1939)	20	20	5
Stalker, H. (1938)	?	?	1
Myself	120	20	6
	902	99	45

FIG. 40.—*Representing Frequency of Fractures other than those of the Femurs or Vertebrae in Cardiazol and Triazol Convulsions.*

Author.	Number of cases.	Number of fractures.		
		Humerus.	Mandible.	Scapula.
Pameijer, J. H. (1938)	1200	3	1	3
Goldstein *et al.* (1938)	102	3	0	0
Pollock, H. M. (1939)	1140	2	1	0
Carp, Louis (1939)	687	5	1	0
Kraus, G. (1938)	?	1	0	0
Briner, O. (1938)	111	0	0	1
Good, Rankin (1939)	?	1	0	0
	3240	15 (2·1%)	3 (·1%)	4 (·13%)

It has been said that the former are largely the result of septic teeth, and may be almost eliminated by careful dental attention prior to treatment. To eliminate the latter complication, routine X-ray examination of the chest is recommended. Even if these steps are undertaken in every case, as seems desirable, it is questionable whether they would eliminate all such cases, although it is certain that many such tragedies would be averted.

Not all cases are benefited or unchanged regarding their symptoms: some are definitely made worse. Kronfield and Sternberg (1937), Küppers (1937), and Humbert and Friedman (1937) are quoted by Rees Thomas and Wilson (1938) as reporting such cases, and I have seen several among the cases I have treated.

In view of what has been said above, it might be thought that there was no further desire for the use of cardiazol, but I consider that it cannot be lightly discarded. Briner (1937) (quoted by Rees Thomas and Wilson (1938)) emphasizes the importance of clinical experience as opposed to statistics, and my experience of its effects has convinced me that until further evidence is forthcoming its use is still warranted.

During my stay at Cane Hill Hospital there have come under my care many schizophrenics after convulsion therapy. Below are the findings of its effect on 120 consecutively treated cases: Table H represents the effect of cardiazol proportionate to the duration of the illness, results being assessed according to the already defined terms. Unfortunately, as may be seen, the majority of cases were very chronic. The figures of early cases are too small in themselves to produce any definite conclusions. Nevertheless the improvement in early cases is stressed. It is to be noted that of the five much improved and two improved cases of under six months' duration, two of the

TABLE

Table Indicating the Prognostic Outlook in 35 Cases of Under Three Years' Duration

Serial No.	Status.	Date of commencement of treatment.	Age.	Duration of psychosis prior to treatment.		Previous hospitalization.	Hereditary factors.
				In hosp.	Total.		
1	C.	10.i.38	28	3 m.	4 m.	M.H. 1931	4 ?
2	C.	18.i.38	21	6 m.	7 m.	M.H. 1936	Father died in M.H.
3	C.	19.ii.38	31	7 m.	1 2/12 y.	*Nil*	Mother was in M.H.; father in N.H. now
4	C.	21.ii.38	37	1 y.	3 y.	M.H.	1 sibling died schiz.; father died T.B.
5	C.	9.iii.38	26	1 2/12 y.	2 1/12 y.	M.H. twice	*Nil*
6	C.	16.iii.38	21	15 m.	2 1/12 y.	*Nil*	,,
7	C.	10.iii.38	31	2 1/2 y.	2 1/2 y.	,,	,,
8	C.	16.iii.38	26	3 m.	2 1/2 y.	M.H. (V.)	,,
9	C.	27.iii.38	30	3 y.	3 y.	M.D. colony 8 years	,,
10	C.	27.iii.38	36	3 w.	8 m.	*Nil*	,,
11	C.	13.iv.38	23	1 w.	10 m.	Transfer from M.H.	,,
12	C.	19.iv.38	31	2 w.	1 1/2 y.	O.P.	Grandmother in M.H.
13	C.	25.iv.38	34	3 w.	7 w.	*Nil*	*Nil*
14	C.	26.v.48	26	10 d.	10 d.	M.H.	,,
15	C.	6.vi.38	33	3 w.	1 3/5 y.	*Nil*	Pat. aunt in M.H.
16	C.	2.vii.38	23	3 w.	8 w.	,,	Pat. uncle in M.H.
17	C.	15.vii.38	35	18 m.	18 m.	,,	*Nil*
18	C.	22.vii.38	35	5 m.	6 m.	,,	Mat. aunt—suicide
19	C.	28.vii.38	30	1 m.	7 m.	,,	*Nil*
20	C.	30.vii.38	17	1 10/12 y.	2 7/12 y.	,,	Mother died T.B.
21	C.	12.viii.38	32	10 m.	1 4/12 y.	,,	2 siblings T.B.
22	C.	12.viii.38	33	1 7/12 y.	1 7/12 y. ?	?	?
23	C.	17.ix.38	29	2 w.	6 w.	*Nil*	*Nil*
24	V.	19.x.38	24	2 w.	9 w.	,,	,,
25	C.	7.xi.38	26	3 m.	3 y.	,,	,,
26	C.	27.xi.38	20	3 w.	4 w.	,,	Mother died T.B.
27	C.	17.xii.38	28	2 w.	1 y. 2 w.	,,	*Nil*
28	C.	5.i.39	28	6 w.	3 m.	,,	,,
29	C.	17.i.39	20	10 d.	1 1/2 y.	,,	Mother in M.H.
30	C.	20.ii.39	24	1 m.	7 m.	,,	*Nil*
31	C.	15.iv.39	33	1 m.	2 m.	,,	,,
32	C.	4.v.39	28	3 m.	4 m.	,,	?
33	C.	13.v.39	23	1 m.	2 m.	M.H. 1935	Uncle suicide; aunt in M.H.
34	C.	17.v.39	42	6 m.	1 1/2 y.	*Nil*	*Nil*
35	C.	23.v.39	29	1 y.	1 2/12 y.	T.B. in gen. hosp.	Brother died T.B.

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G.

Prior to Treatment, together with the Effect of Treatment on the Cases Concerned.

Bodily build.	Tempera-ment.	Pre-psychotic reaction.	Onset.	Exogenic factors.	Acute symptoms.	Number of fits.	Immediate result of treatment.	Present condition.
Norm.	Schiz.	Fair.	Grad.	*Nil*	Cat.	29	M.I.	M.I.D.E.
,,	,,	Poor	Sud.	,,	Heb.	25	U.	U.F.N.
Asth.	,,	,,	Grad.	,,	,,	17	U.	W.O.E.
Norm.	Norm.	Fair	Sud.	Overwork	Cat. dep.	20	U.	W.O.N.
Asth.	Schiz.	Poor	Insid.	Head trauma	,, ,,	20	U.	W.O.E.
?	,,	,,	Sud.	*Nil*	Par.	18	M.I.	U.D.N.
Asth.	?	?	?	?	Cat.	20	U.	U.O.N.
Norm.	?	?	Acute	*Nil*	,,	7	U.	W.O.E.
Asth.	M.D.	Poor	Grad.	,,	Ind.	25	W.	W.O.N.
,,	Schiz.	,,	,,	,,	Cat.	..	I.	,,
Norm.	Norm.	Good	Sud.	Malaria	,,	18	I. (12)	M.I.D.E.
,,	Schiz.	Fair	Grad.	*Nil*	Par.	20	I. (R.)	U.O.N.
?	Ind.	Good	Sud.	Unempl.	Ind.	4–5	M.I.	M.I.D.E.
Norm.	Schiz.	Fair	Grad.	*Nil*	Cat.	11	M.I.	,,
,,	,, M.D.	,,	,,	,,	Par.	28	U.	U.O.E.
,,	Norm.	,,	? Ac.	?	,,	25	U.	M.I.D.E.
?	Schiz.	Poor	Insid.	*Nil*	Ind.	10	U.	U.O.N.
Asth.	,,	,,	Grad.	,,	Cat.	13	I.	,,
Norm.	Ind.	Fair	?	Malaria	Par.	9	U.	U.F.L.
Ath.	?	?	Sud.	?	,,	5	U.	W.O.N.
Asth.	M.D. Ind.	Fair	,,	*Nil*	Cat.	19	U.	U.O.E.
,,	?	?	?	?	Ind.	27	U.	W.O.E.
?	Schiz.	Good	Acute	Unempl.	,,	25	M.I.	M.I.D.E.
?	Norm.	Fair	Grad.	Mental shock	,,	9	U.	U.N.T.
Ath.	Ind.	,,	Grad.	*Nil*	Cat.	..	I.	U.O.N.
?	Norm.	,,	Acute	Unempl.	,,	15	M.I.	M.P.D.E.
Ath.	Ind.	,,	Grad.	*Nil*	Heb.	17	U.	U.O.N.
Norm.	Norm.	,,	Sud.	Unempl.	Cat. dep.	17	I.	M.I.D.E.
Ind.	Schiz.	Poor	Insid.	*Nil*	Heb.	21	U.	W.O.N.
Norm.	Ind.	,,	Grad.	Sex	Ind.	2	U.	I.N.T.
,,	,,	Fair	Sud.	*Nil*	Par.	4	U.	M.I.D.E.
Ind.	Schiz.	,,	?	?	Ind.	12	M.I.	M.I.D.N.
Asth.	,,	Poor	Insid.	*Nil*	Heb.	7	U.	W.O.N.
,,	,,	Fair	,,	Onset war	Par.	9	U.	U.O.N.
,,	M.D. schiz.	Poor	,,	*Nil*	Par.	6	U.	Dead.

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former and the two latter occurred in catatonic cases and rapidly relapsed following the cessation of cardiazol.

Table G shows the prognostic factors of all cases under three years' duration, according to the criteria and standards already discussed and described in relation to Table E. Of the unchanged cases a few were made slightly better and some slightly worse, but the extent of these was so minor as not to be considered worthy of special mention. The phenomenon of convulsive therapy enabling many chronic patients previously silent, immobile and inaccessible, etc., to behave and work well where they had not previously done so (as described by Cook, 1938, and others) was conspicuous by its absence. Detailed histories of each of the cases who were benefited to the degree of much improvement or improvement is shown below and must be read in conjunction with Table G.

TABLE H.—*Showing the Effect of Convulsion Therapy on* 120 *Consecutively Treated Cases of Schizophrenia at Cane Hill Hospital.*

Period of duration of symptoms prior to treatment.	Number of cases.	Immediate effect of treatment.			Condition of cases on 31.xii.39.				
		M.I.	I.	U.	M.I.	I.	U.	N.T.	D.
0 to 6 months .	10	5 (50%)	2 (30%)	3 (30%)	4	1	5	0	0
7 to 12 ,, .	6	0	0	6	0	0	5	1	0
1 to 2 years .	10	0	0	10	0	0	9	0	1
2 to 3 ,, .	8	1	1	6	0	0	8	0	0
3 to 5 ,, .	22	1	1	20	0	1	21	0	0
5 to 10 ,, .	35	0	0	35	0	1	33	0	1
Over 10 years .	29	0	0	29	0	0	29	0	0
Total .	120	7	4	109	4	3	110	1	2

CASE HISTORIES.

CASE 36.—L. G—(i.e. over four years' history), male patient, aged 28. No insanity in the family. Subject to all the usual childish complaints, including bronchitis every winter. He was backward at school and only reached Standard IV, but he was quite happy there, although he never played games and made few friends. After leaving school he was employed as a butcher's assistant in his father's shop and did quite well.

Personality.—He was always of a reserved and retiring temperament and tended to be timid and hypochondriacal, making much of such injuries as scratches, etc. Although he did not make many friends, he was affectionate, good-tempered to his family and easily managed by them. He had only one brother, who was as brilliant as he was dull, and this made him very envious, and played no small part in his mental upset.

Psychosis.—The first symptoms were only recognized a year before admission, when he started such mannerisms as repeatedly looking at himself in the glass, scratching his fingers, chewing his food and not swallowing it. The mother now realized that he was becoming more apathetic and had lost power of concentration in the previous three years. In recent months he became more dreamy and would laugh and talk to himself and finally gave obvious signs of hallucinations, waking up his mother in the night and asking whether the detectives were coming, and being terrified that a man was tracking him down to kill him. He suffered from insomnia and his appetite was poor.

On 15.xi.38 he was admitted to Cane Hill Hospital as a certified patient, having previously been in Bexley hospital as a voluntary patient for three months. On admission he was deluded and hallucinated and grimacing, manneristic, irrational and irrelevant in his answers to questions and unable to give a good account of himself. He exhibited considerable anxiety associated with his delusions and emotionally was frequently depressed. From this time until the time of treatment his condition did not change.

On 20.i.39 cardiazol treatment was commenced. Improvement was noticed from the beginning, and by the time he had seven injections his emotional control was much improved and he was quieter in manner and behaviour. He had lost his mannerisms and could discuss his position with some insight.

After the twelfth injection his schizophrenic symptoms had apparently disappeared; he was quiet, well-behaved and a good worker. His mental defective background, of course, remained.

20.iv.39.—Discharged on trial.

18.v.39.—Discharged recovered.

Unfortunately the remission did not last for long, and by 7.vii.39 he was readmitted suffering from symptoms similar to those on the previous occasion. This time cardiazol had no beneficial effect and he is still in the hospital materially unchanged.

Comment.—This was a case of schizophrenia in a mental defective. There was a strong element of anxiety state present also. The cardiazol was entirely effective, despite the four years' history, on its first application, and attained its effect primarily on the emotional state. Perhaps the length of history and unfavourable prognostic significance of paranoid schizophrenia in a man of 28 were responsible for its failure in the second application.

CASE 25.—R. E. W—, male patient, aged 26. The sixth of nine children, and parents and siblings all of an excitable nature. Brother had a severe breakdown (probably psychotic) during the war. One sibling was M.D. and died of Tb. The patient was a strong child and did well at school. When he left school he was employed successively as a chauffeur, apprentice in an engineering shop, as a stock-broker's clerk and then as an assistant in an armament firm.

Personality.—He was reported to be sociable and popular and to get on well with his family, but he was always excitable, argumentative, headstrong and egotistical. Prior to his marriage he had never been regularly with any girl, and had declared he would marry the first girl he touched. This was true, and when he married his wife three years before admission she was already pregnant. Prior to the outbreak of the present illness his wife was thinking of leaving him owing to his excessive sexual demands on her and his bad temper. Quarrels ensued from this, which became more and more frequent.

Psychosis.—For the two years prior to admission he was more irritable and excitable than ever. Quarrels with his wife were more frequent and his relations with his fellow workers became strained. He claimed to have invented a new speeding-up technique and wrote to the Government describing flaws in the shells that his firm were producing. He started looking for burglars in the house and became jealous and suspicious of his wife. At home he talked incessantly and would never rest for two or three minutes on end.

In November, 1936, he became very excited by the Crystal Palace fire. His doctor stopped him from work and sent him to bed. He became even more garrulous and even during the night talked of politics and religion. One day soon after Christmas, 1936, he left the house, saying that he was going to meet a friend, and was next heard of at Maidstone in Kent, where he had been found wandering and taken into custody. He was certified insane and admitted to Kent County Mental Hospital on 15.i.37.

He was restless, over-active and excitable; negativistic, aggressive and violent; deluded and hallucinated; given to mannerisms and fixed attitudes; slovenly and untidy, faulty in habits, and indulging very frequently in masturbation; inaccessible

and lost to the world of reality. Occasionally he had more rational and quieter times.

On 3.ix.37 he was admitted to Cane Hill hospital materially unchanged from the above. He was given a course of continuous narcosis, during which he became less restless and excitable, but otherwise unchanged.

On 7.xi.37 cardiazol treatment commenced. He soon began to improve, and by the time he had had five injections he was reasonably quiet, talked rationally about his discharge, wrote excellent letters to his wife, engaged himself efficiently in rug-making and showed intelligent interest in public affairs. The injections were continued. By the time he had had the thirteenth injection he had relapsed considerably (being confused and retarded), and he never got so well again. Nevertheless while he was having injections he was more or less in touch with reality. The first course was ended after 30 injections, by which time although he was euphoric, excitable, truculent and devoid of insight, he was still in touch with reality. After cessation of treatment he soon became an inaccessible catatonic again. Since then he has had three further courses of convulsion therapy with cardiazol. Each course has improved his emotional stability to a reasonable level. He has become reasonably alert and amiable, able to do a little work and take some interest in dancing and reading a newspaper, and to a certain extent is in touch with his surroundings; but still he is devoid of insight, irrational and dissociated in speech and deluded and hallucinated and he always relapses into an inaccessible catatonia when injections are suspended.

Comment.—The initial effect of the cardiazol treatment was truly dramatic. One wonders whether the continuance of treatment was not responsible for the subsequent regression. Its subsequent infallible beneficial effect on the affective side of his personality is to be noted. The degree of improvement has become less on each occasion.

CASE 12.—A. W. E—. This patient's wife had left him and only deficient details were obtainable from a neighbour.

Male patient, aged 36. A strong hereditary taint, his mother being in a mental hospital and his father having committed suicide when he was ten years old. The patient says he did fairly well at school but afterwards led an irregular life, and was employed successively as page boy, waiter, packer and at odd jobs. He married at 20, but his wife drank and he separated. From the age of 29 he had lived with another woman by whom he had one child. He got on well with her until the onset of the present trouble.

Psychosis.—The patient had to give up his job as a packer owing to its being too heavy for him. Since then he has only had odd jobs. He started behaving peculiarly a few weeks before admission, after losing a job. He wandered round in a depressed way, saying repeatedly that he could not pay the rent and had no money. He refused his food, saying that he could not eat; became untidy and refused to wash or shave. One day he suddenly started cleaning the floor himself becaused he was "going to be good in future." Following an attempt at suicide he was taken to a general hospital and was admitted into Cane Hill Hospital as a voluntary patient on 10.viii.37.

He was sullen, restless and mute, and soon lapsed into a catatonic stupor. From then onwards he fluctuated from a state of stupor or pseudo-stupor to more alert and lucid intervals, but even in these he remained sullen, aloof, negativistic and eccentric; difficult with his food; given to grinning and laughing to himself for no apparent reason but really due to hallucinations; and dull and indifferent to his condition and his surroundings.

On 19.iv.38 cardiazol treatment commenced. He soon started to improve, and by the time he had had his eighth fit he had improved to such an extent that his sullen and resentful attitude had disappeared, his dull and gloomy outlook given way to an alert and cheerful one; his insight and ability to discuss things rationally returned and his behaviour became exemplary.

On 16.vi.38 the patient took his discharge as a voluntary patient completely

recovered. He soon relapsed, however, and on 31.viii.38 was readmitted as a certified patient. On this occasion his symptoms were much the same as on the first occasion, but coloured to a greater extent with hallucinations. Cardiazol was tried again, and after five fits he was much brighter and able to converse rationally and had regained insight and his hallucinations had disappeared. The course was stopped after seven fits. He soon relapsed, however. Two further courses were given, with the same beneficial result on both occasions and the same subsequent relapse. The patient states that despite his apparent improvement he has never been completely free from hallucinations since their onset.

Comment.—The prognosis in this case was not good from the beginning. The marked effect of cardiazol on the affective side is obvious. The repeated subsequent relapse is interesting.

CASE 6.—C. A—, male patient, aged 20. Family history nil. Reached top standard at school. Left school at 14. Was an errand boy until 16 years old and since then has had several odd jobs, the longest being eight months.

Personality.—He had always been quiet and reserved; was usually popular with his mates but never made real friends. He had few interests and was inclined to live a solitary and vegetative existence.

Psychosis.—Four months prior to admission the patient first expressed ideas of reference and delusions of persecution. He became unemployed; sat about all day laughing and talking to himself; exhibited sexual delusions and his speech became inconsequent and irrational. He was quite willing to go to a mental hospital. At the time of admission he was a typical grinning, grimacing schizophrenic, full of bizarre delusions and hallucinations. He became dull, indolent and indifferent and the hallucinations continued.

On 14.ii.38 cardiazol treatment commenced. He had a course of twelve fits, by which time he was "much improved." His outward behaviour was normal and his mannerisms gone. He had only a hazy recollection of his delusions and hallucinations. His schizoid personality, however, remained obvious.

On 3.xi.38 he was discharged recovered. His behaviour since then has been in keeping with his schizoid tendency and his condition has regressed. He got odd jobs occasionally, but always failed to keep them; he now remains at home and makes no friends, and although dull and apathetic, is inclined to a generally paranoid outlook.

Comment.—A schizoid personality in whom the prognostic outlook was poor. That cardiazol removed the patient's dull and indifferent indolence and with it the hallucinations is remarkable. The subsequent regression was only to be expected in view of his previous history.

CASE 23.—T. H—. male patient, aged 29. Family history nil. Patient was always strong physically. He did well at school, where we reached the top standard. After school he was an errand boy for two years, porter of a block of flats for eleven years and since then had only had odd jobs. He has been very sensitive about his inability to find a job recently.

Personality.—Always of a quiet, shy and retiring nature and a poor mixer. He seemed to have a sense of inferiority and ideas of reference.

Psychosis.—Seven weeks before admission the patient started a new job as a painter, and was always very nervous of climbing the ladder. About four days before admission was depressed and rather silent. Next day he complained that people were making fun of his eyes. Next night he woke his mother and slowly pushed her to the window, with homicidal intentions. On 31.viii.38 he was admitted to Cane Hill hospital. He was sullen, depressed and resistive and under the influence of auditory hallucinations. He was subject to bizarre delusions and hallucinations. He heard a voice telling him to rape his mother. He thought that she gave him one of the leaders of her eye. He was irrational in speech, but there was a certain degree of insight left.

On 17.ix.38 cardiazol treatment was commenced. By the time he had had four fits his condition had started improving. After this he improved gradually.

Altogether 25 injections were given. He was quiet, well-behaved and a good worker; no longer hallucinated and having insight into his condition. He remained eccentric and his speech frequently contained verbal mannerisms.

He was discharged to the care of his mother on 18.i.39 and since then has remained much the same.

Comment.—The prognosis in this case was comparatively good despite the schizoid temperament—no family history, acute onset, unemployment as an exogenic precipitating cause, good record of employment, and prepsychotic reaction. The cardiazol probably only accelerated a process that would have taken place in the ordinary course of events.

CASE 13.—J. M—, male, aged 34. No family taint. He did quite well at school, and afterwards was a trumpeter in the Army, a waiter, a batman, an employee in Siemen's works, and finally for the twelve years previous to this trouble (i.e. psychosis) worked in the building trade. The last few months he has had to work in the T.N.T. department of an arsenal. This was very heavy work and got him run down.

Personality.—He was good-tempered and not prone to worry unnecessarily. He was not very sociable, but fond of his own family and home and a good father and husband. He smoked continuously, but drank very little. He was inclined to be introverted and keep his thoughts and troubles to himself.

Psychosis.—The patient had found his work in the armament factory very heavy, and a few days before admission started to get confused on names and dates and to talk incessantly of going to see a relative abroad. When seen by the doctor he was sent to the Maudsley Hospital, from there to an observation ward, and then to Cane Hill.

On admission on 29.iii.38 he was euphoric in mood, mildly confused in thought and dissociated and irrational in speech. He frequently grinned and grimaced to himself and soon constructed ideas of reference, and became very suspicious of the nursing staff.

On 25.iv.38 triazol commenced. Improvement was rapid. After five fits the patient had become emotionally stable, and had lost his delusions and suspicions and had no recollection of them. He maintained his progress, soon regained insight and could be said to have recovered completely. His whereabouts cannot now be ascertained.

Comment.—The prognosis in this case was good. Despite the patient's rather introverted temperament, his prepsychotic reaction and adjustment was good. The exogenic factor of severe physical strain at his work and the rapidity of the onset all pointed towards a favourable outcome, as did the comparative paucity of paranoid symptoms. Nevertheless, the rapid beneficial effect of the treatment was remarkable, and undoubtedly saved the patient a considerable period of hospitalization and very likely produced a more thorough recovery.

CASE 26.—D. W. J—, male patient, aged 20. There was no family history of insanity, but the mother died of tuberculosis eight months after the patient's birth. He reached the top standard at school and afterwards attended evening classes. After leaving school he was employed in the electrical trade.

Personality.—He was always rather solitary and unsociable although he got on well with his relatives and neighbours. He is said to have been of a worrying disposition. He was studious and a heavy reader. His chief interest was his garden. He had made himself a really efficient and skilled gardener and was very proud of his work.

Psychosis.—Twelve weeks prior to admission the patient seemed " off colour " and complained of pains in the stomach, etc. He was kept off work. For ten weeks he showed no overt symptoms. He got no better, began rambling in his conversation, was certified and admitted to Cane Hill on 6.xii.38. He was incoherent and inaccessible. Emotionally he was unstable—shouting, screaming and crying. He was very deluded and hallucinated, picking rats off the floor and the Holy Ghost off the wall. He was restless, destructive and faulty in habits.

Before cardiazol treatment had started the patient had begun to improve, being less restless and emotionally more co-ordinated.

27.x.38 cardiazol commenced. By the time he had had two fits he had made excellent progress. Emotionally he was stabilized. His apathy had given place to a general interest, and he applied himself to occupational therapy with real zeal and enthusiasm. His delusions and hallucinations had disappeared and he had quite good insight into his condition. He was given 15 fits in all, but did not improve much further. He was discharged " much improved " on 26.v.39. Since then he has remained his usual self, obtained work and returned to his hobby of gardening.

Comment.—The prognosis in this case was obviously good (a young age, absence of family history, acute onset, and precipitating factor of inability to obtain a permanent job; also the indefinite nature of the symptoms of the acute phase), and such improvement was to be expected. The remarkable manner in which this was rapidly produced by two injections of cardiazol was interesting.

CASE 28.—J. D—, male patient, aged 28. single. No family history of insanity. Patient had a brilliant school career and won a scholarship for £200 at Darjeeling College. He came to England and trained as an engineer at Trinity College, eventually taking a degree in engineering. He worked for Callendar Cables, then went to New Zealand on a ship as a refrigerating engineer. When he was discharged from the ship he had no work or prospects of any, and became depressed.

Personality.—Details of this were not obtainable, as his parents were in India, but he gave the impression (after his recovery) of being a cheerful, intelligent person, sociable and a good mixer, but with a rather childish irresponsibility and lack of objective.

Psychosis.—Following failure to get employment he became dull and depressed, and one day when he saw an advertisement in the newspaper for recruits for the R.A.F. he felt that this was a special message for him—" everything in the paper was woven about my life and there was even a drawing of me in it." He applied and was rejected, and thereafter developed auditory hallucinations. The voice of an old man told him that he would be sent to Devil's Island for neglecting to re-apply for admission to the R.A.F. He became terrified and threw himself under a taxi in an effort to commit suicide. He was admitted to Cane Hill on 5.i.39.

He was almost perpetually occupied with hallucinations and was dull, retarded, depressed and lachrymose. He required washing and hand-feeding; was incapable of spontaneous activity.

On 30.ii.39 cardiazol was commenced. After three injections he showed some signs of improvement, being more alert, less deluded and hallucinated. After a few more fits his affective condition had changed further. He was now in a state of euphoria and fatuously pleased with himself and the world in general. He was still deluded and hallucinated. By the time the course of 15 fits was terminated he had not changed very much further. He was still euphoric, and clung to the idea of being asked by God's voice to join the R.A.F. He continued to improve to such an extent that he was discharged " much improved " on 5.vi.39. Since then he has remained in good health and recently joined the Army, at which he has been an adept soldier. Three features of interest are noteworthy: (1) the persistent gain in weight during and following cardiazol treatment; (2) the change of the patient's facial expression during improvement; (3) the limited success of cardiazol, leading on to ultimate success after it had been suspended.

Comment.—The prognosis in this case was very good—normal build, normal temperament, good prepsychotic reaction, acute onset and exogenic factor of unemployment: so that the limited effect of cardiazol treatment during its 15 fits is hardly flattering. What improvement was produced was caused by the early injections.

CASE 37 (over four years' history).—D. J. S—, male patient, aged 36. It was impossible to get a satisfactory history in this case, but according to his brother he did fairly well at school and afterwards became employed as a clerk.

Personality.—From the time of adolescence onwards he had shown certain schizophrenic traits. He never kept a job for long, was facile and fickle in his opinions, kept much to himself and indulged in phantasy. He asserted that he was going to make his name by setting up a firm to sell luncheon baskets to motorists. His brother stated that he has been a continuous source of trouble and worry to the family for the past 17 years, having never retained a job more than a few weeks, and frequently plagued them for financial assistance. His symptoms developed into acute paranoid schizophrenia, and he was admitted to Cane Hill Hospital on 26.viii.39.

On admission he was resistive, aggressive, violent, and frequently made impulsive attacks on anyone near him. Usually he would not answer when spoken to, but sometimes accused others of persecuting him. He was confused and disorientated, and his mood was one of depression. He soon improved and became quieter in behaviour and discussed his case and stated that his hallucinations were less, but he relapsed a few days later into a state of catatonic stupor and remained in it for 14 days, until cardiazol treatment was commenced on 24.x.39.

He improved at once, and by the time he had had three injections he had recovered completely from his stupor. His delusions and hallucinations soon disappeared and he took a normal interest in life and worked fairly well in the clerks' office, although his schizoid personality was still obvious. On 22.xi.39 he was discharged to the care of his brother, but he relapsed the same day and became silent, sullen, deluded, hallucinated and depressed, and has remained so.

Comment.—The prognosis in this case was poor, and although the cardiazol dispelled the stupor momentarily, relapse was rapid when the patient was subjected to the strain of the outside world.

CASE 32.—W. G. S—, male patient, aged 28. Very little of this patient's past history was obtainable. He was of a fair educational level; after leaving school he had been a bandsman in the Army for seven years, being discharged two years before coming to the hospital. During this time he had been unable to get employment as a musician, and was only able to get odd jobs.

Personality.—A quiet, reserved and introverted person, shy, sensitive and artistic.

Psychosis.—Admitted to Cane Hill Hospital on 13.iv.39. He was correctly orientated and realized to a certain extent that he had gone to pieces. He was very hallucinated aurally and visually; dull and retarded in his outlook and depressed emotionally; laughed inexplicably to himself. His condition remained much the same until on 4.v.39 cardiazol treatment was commenced. After only two fits he felt better, and by the time he had had ten he had improved to the extent of being able to discuss his position with insight, his hallucinations had disappeared, and he was taking an alert interest in the ward and playing in the hospital band. He was given only twelve fits in all.

He maintained his improvement and was discharged on 5.x.39 much improved, although his schizoid personality traits were still obvious. Since then he has remained much the same.

Comment.—The prognosis in this case was again quite good (as far as could be ascertained): his previous good record in the Army band; sudden onset precipitated by the exogenic factor of unemployment worries, all pointed to a favourable conclusion. Cardiazol accelerated this, but the patient would probably have got better more gradually without its effects.

CASE 24.—E. S. W—, male patient, aged 24, single. Family history nil. He did quite well at school, but never wanted to do homework and preferred to make model aeroplanes and chemical experiments. He worked for 2½ years in a wholesale firm, gave it up spontaneously for no particular reason and after that tried for many jobs. He wanted to go into the Air Force, but was failed owing to his eyesight. He worried considerably about this.

Personality.—Had always had a nervous disposition and been inclined to overdo things. He never gave his brain a rest and switched too rapidly from one subject

to another. Very sociable and made friends easily, and has many hobbies. Had always been shy of girls—confided in his mother. A heavy smoker, but a teetotaller.

Psychosis.—Nine months before admission certain circumstances associated with his uncle's death worried the patient very much. After that he became very hypochondriacal. He was also unemployed at this time, and failure to get work, although he tried hard, worried him further. He became quieter and more disinterested; gave up his hobbies. Three days before admission he felt very ill and sent for a doctor and asked to be sent to a mental hospital.

On 29.ix.38 he was admitted to Cane Hill Hospital as a voluntary patient. On admission he said that he was psychic; aurally and visually he was very hallucinated; he had feelings of bodily change relieved by turning somersaults; he was restless and overactive, incontinent in habits, and in need of constant care and supervision.

On 19.x.38 cardiazol was commenced. Nine fits were given. The patient soon improved and became emotionally more stable, less restless and overactive, and his hallucinations disappeared. He took his discharge against advice on 15.xi.38.

Comment.—Despite the patient's rather defective personality traits the prognosis in this case was good: quite good pre-psychotic reaction, exogenic factor of worry over unemployment, acute onset, etc. Cardiazol may be said to have only accelerated a process which would have taken place in any event.

CASE 39 (over four years' history).—W. S. O'F—, male patient, aged 23, single. No family history. Patient did fairly well at school, and afterwards was employed as an engineer's fitter and a labourer.

Personality.—A difficult person; shy and seclusive; introverted and rather apathetic and indifferent to the world at large. He was always religiously inclined and was an ardent Roman Catholic.

Psychosis.—On 4.xii.34 the patient was admitted to Banstead Mental Hospital in what was thought to be an attack of mania. He soon recovered and was discharged on 15.vii.35. After this he got on very well until he suddenly became mute, negativistic, impulsive and violent. This was in February, 1936, two weeks before his admission to Cane Hill Hospital which took place on 17.ii.36.

On admission he was found to be in a typical catatonic stupor. He was dull, apathetic, indifferent and inaccessible; slovenly, untidy and faulty in habits.

By 15.vii.36 the patient had recovered spontaneously. His conversation was rational and his behaviour good, and he was discharged on 8.x.36. He behaved well following this, until another attack occurred and he was readmitted on 7.vi.37 to Cane Hill. He soon recovered and was discharged. His fourth attack of catatonia necessitated readmission to Cane Hill on 13.v.38.

On 30.v.38 triazol was commenced. By the time he had had four fits he had recovered in a manner similar to that noted on previous occasions, but lapsed into stupor a fortnight later. This process was repeated several times. On one occasion he recovered after only one injection, but no matter how many he had, he always relapsed.

Comment.—In this case of recurrent catatonia there was an obvious inherent tendency to recovery. The manner in which convulsion treatment invariably stimulated this tendency reveals its very definite effect on cases of catatonic stupor, although the case would probably have staged recovery phases without such treatment.

CASE 18.—J. L. K—, male patient, aged 35, single. A maternal aunt committed suicide. He was always "mother's boy" and very spoilt in his childhood. Did moderately well at school. Took up engraving on leaving school, but did not like it and soon gave it up. Then found work in his father's office and was not a success. Since then he has made no serious effort to get employment, living on a private income of £150 to £200 a year and doing the housework; for the last six years, since his sister got married, he has lived alone.

Personality.—He has always been a very strange, solitary, self-sufficient person, not wanting society and completely ignoring other people's convenience or feelings. He was prone to be slovenly and untidy and neglectful of his personal appearance. He never read books and his only interest seems to have been making model trains. Despite his peculiarities, his neighbours liked him well enough to invite him to various outings.

Psychosis.—This appeared to come on quite suddenly, following the termination of his one and only friendship with a girl, which was nothing more than platonic. He felt ill and went by himself in the night to a general hospital. He was admitted to Cane Hill Hospital on 16.ii.38. He was confused and retarded in his responses to questions; he had ideas of reference and delusions of persecution, and was impulsive, aggressive, resistive and violent. He remained dull and apathetic in spite of bizarre delusions of persecution.

On 22.vii.38 triazol treatment commenced. After the first course of 12 fits the patient was not improved. Soon after he lapsed into a genuine stupor. Five further fits brought him out of the stupor and a total course of 13 was given, by which time he had improved very considerably and was able to converse freely and showed some insight. He soon lapsed into stupor after treatment was finished, however. A further course was given with a similar result, another lapse following its cessation.

Comment.—The prognosis in this case was very gloomy. The repeated ability of cardiazol to dispel a catatonic stupor is again well illustrated. The bizarre and rather fantastic delusions also disappeared, but it is to be noted that these were of a more superficial and effervescent nature than those of a well-established paranoid schizophrenic.

CASE 1.—R. S—, male patient, aged 28, single. No family taint. Did quite well at a convent school. He afterwards joined the Army and when he left there took up mental nursing.

Personality.—Appeared to be schizoid, musical type.

Psychosis.—While in the Army he was found wandering about depressed and lachrymose. He was confused and emotionally unstable and was subject to ideas of reference. Also he had numerous bizarre unfixed delusions. His condition improved rapidly, and he was soon discharged to the care of his father. He soon recovered, and was employed in two different mental hospitals and dismissed from each for what was described as his paranoidal attitude to other members of the staff. He then took up private nursing. One month before admission the patient began to feel ill. He soon developed acute symptoms, and was admitted to Cane Hill Hospital on 26.viii.38.

On admission he thought that he was to be eaten by rats and that his eyes were shrinking up. He was very deluded and depressed, exhibited fantastic persecutory delusions and had no insight. One of his main symptoms was anxiety.

On 3.xi.38 convulsion treatment commenced. By the time of his seventh fit he had improved considerably; he said that he had never felt better in his life and that his mind was "afloat." He was still hallucinated and still had ideas of reference. He was given 25 fits in all, and at the end of the course had not regained insight, and delusions and hallucinations still persisted. Improvement continued, and on 23.iii.39 he was discharged. Since then he has remained his usual self, showing a schizoid temperament.

Comment.—The outlook in this case did not appear particularly good, as far as the details would allow any prognosis to be made, but the acute onset, previous recovery and fair pre-psychotic reaction, etc., made an improvement quite probable. Cardiazol accelerated this, and attained its effect in the first few injections.

CASE 38.—J. R. R—. The patient's mother was very difficult and only a sparse history was obtainable.

Male patient, aged 20, single. No family insanity. He did well at school, reaching the top standard two years before leaving. Following this, he was an errand boy in an off-licence shop, then a packer. He is said to have had a nervous

breakdown nine months prior to admission. He soon got over this and then joined the Army.

Personality.—No details obtainable, but in hospital he gave the impression of the " strong, silent man." He was quiet and introverted and self-contained. He was quite sociable and fond of games.

Psychosis.—After six months' service in the Army a change in personality was noted. He lost interest in his work, at which he was previously quite efficient, and there was a general loss of emotional reaction. On admission to the Military Hospital he was deluded, hallucinated and impulsive and affectively depressed. On admission to Cane Hill Hospital on 6.vi.34 his condition was as above, but he was also noted to laugh inanely to himself. He made a very rapid improvement and was discharged recovered on 11.x.34.

On 11.x.35 he was readmitted. He was incoherent and rambling in speech and displayed confusion, restlessness, mannerisms and bizarre attitudes ; he was wandering in attention and deficient in concentration. He gave evidence of being hallucinated. He improved under routine hospitalization, and became more alert and stable and worked quite well in the occupational centre, but he remained dull and unsociable and devoid of insight into his condition.

On 16.iii.38 cardiazol commenced. He soon began to improve and became more alert and emotionally stable, but was still devoid of real insight and retarded in thought. After twelve injections treatment was stopped. He never got much further, remaining rather shy, diffident, indifferent and lacking in initiative until the outbreak of war spurred him on to ask for a period of trial to " do his bit," and on 30.xi.39 he was discharged. Since his discharge he has remained well.

Comment.—So far as was known the outlook in this case was fair. The fact that this patient had recovered once before made the outlook better. Cardiazol did produce improvement, especially on the emotional level, but it is probable that this would have eventually occurred spontaneously.

Apart from these cases the following points are of interest : One case had a very good prognostic outlook. Eighteen fits were given ; after the first few fits the patient had improved considerably, only to relapse as fits were continued. Ultimate recovery took place a considerable time after cardiazol had been stopped. The patient improved so much that he is now out and doing well in the Army.

Case 15 did not benefit from cardiazol treatment. A few months later the patient improved considerably and was later discharged " much improved."

The complications that occurred in the 120 treated cases were :

Deaths : 2, one from tuberculosis and the other following bilateral fracture of the neck of the femur.

Fractures of the neck of the femur : 2 double and 2 single. One case died following operation (see above). In the other cases the results of extension and pegging by orthopaedic surgeons were so successful that the two single fracture cases are now walking as well as they did before the fracture, and the one bilateral walks with only a slight limp (Gissane, Blair and Rank).

Fractures of the vertebrae : 20 cases have been X-rayed and six cases discovered so far. No untoward symptoms have manifested in any of these four so far (Blair, 1940).

Dislocation of the jaw : several cases occurred sporadically, and in one so invariably as to necessitate cessation of treatment.

Conclusions.

These observations point to certain definite conclusions which I have substantiated in observation of many other treated cases :

(*a*) Cardiazol and triazol convulsions have a beneficial effect on many schizophrenics. The cases they affect are those which from a prognostic point of view have in any case the most favourable outlook. This emphasizes emphatically my contention that the publication of remission rates in treated cases without mention of the prognostic outlook in the various cases is dangerously misleading and comparatively valueless.

(*b*) Convulsion therapy may reduce the duration of hospitalization and improve the quality of remission in such cases, and in a few may even tip the scales sufficiently to produce a recovery which would not otherwise have occurred.

(*c*) Convulsion therapy acts through its effect on the emotional and affective side of the individual. Delusions of a superficial and bizarre nature attached to or resulting from changes of mood may disappear on treatment. The firmly rooted delusions of a typical paranoid schizophrenic are extremely rarely affected.

(*d*) Convulsion therapy, if it is to prove beneficial, will give definite signs and symptoms of improvement before ten injections are given. It is seldom that more than a few injections are needed to produce improvement to a point where contact can be established with the patient. A further injection or two may be allowed, but not more. Persistence in injection frequently leads to a reverse effect.

(*e*) Convulsion therapy has very little effect on patients with a history of over three years' duration. In a few suitable cases its trial is warranted.

The complications of convulsion therapy are serious and not to be viewed light-heartedly. For the following reasons they are not yet to be considered absolute contra-indications to the treatment :

(1) It has yet to be proven that the type of fracture which occurs in the vertebral bodies has any markedly debilitating effect. (2) Fracture of the femur, provided that it is treated promptly by recognized orthopaedic methods, offers excellent prognosis. (3) Other fractures and dislocations have a similar good prognosis if properly treated. (4) X-ray examination of all cases of asthenic build or with a family history of tuberculosis should almost rule out the flaring up of old tuberculosis. (5) Attention to teeth and other septic foci such as tonsils and antra should minimize the possibility of lung abscess. (6) My personal experience of over 100 cases treated with cardiazol is that it has a very markedly beneficial effect in cases of emotional upset.

I may therefore summarize the matter by saying that although cardiazol therapy has not fulfilled its initial promise, it still has a definite place in the

treatment of very carefully selected and prepared cases of schizophrenia, but that its indiscriminate use is dangerous and deeply to be deplored. A selection of cases should be made, and in my opinion treatment should never be persisted in for more than ten injections if definite improvement is not produced, and in any case when much improvement has been obtained, the treatment should not be persisted in for more than another two injections. Such a procedure would minimize the chances of complications, especially the evil effects of further convulsions on a fracture of a vertebra (which may occur without any clinical indication whatsoever—see Donald Blair, *Lancet*, 1940, in course of publication), while the chances of benefit from the treatment would be reduced very little, if at all.

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