

EVALUATION OF A COMMON METHOD OF CONVULSION THERAPY IN BANTU SCHIZOPHRENICS*

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INTRODUCTION

THERE seems little reason to believe that schizophrenia in the Bantu differs materially from the disease in other races, and no one thus far has produced conclusive evidence of fundamental differences between the symptoms of African and European schizophrenics (1, 2, 3, 4, 5). Nevertheless, certain diseases common in Europeans, are rare in Africans (6, 7), others tend to run a different course, and the latter condition may perhaps apply to a somewhat variable disease like schizophrenia, especially considering the existence of certain factors which will be discussed.

In spite of the fact that manic depressive psychosis and schizophrenia are held to be distinct genetical entities (8), cases have occurred which clinically are difficult to differentiate. Therefore if the inherited constitution of a race is such as not to favour the development of manic depressive states, it may be argued that features of this disease will be rarer in the schizophrenics of such a race and hence that their prognosis, according to Gillies (9), will be poorer. Consequently it may be of importance that there is some evidence (2, 3, 4) that the incidence of manic depressive psychosis, as compared with schizophrenia, differs in Africans and Europeans, and that depressive psychosis in the African is rarer. Further evidence (10) of a lower incidence of affective psychosis in the Bantu is provided by the following figures published, of patients resident in all South African mental hospitals at the end of 1951; they were officially classified as follows: Europeans: 516 affective, 2,541 schizophrenic (16 per cent.: 84 per cent.). Africans: 353 affective, 5,319 schizophrenic (7 per cent.: 93 per cent.). For new admissions during 1951 the figures are: Europeans: 113 affective, 216 schizophrenic (33 per cent.: 66 per cent.). Africans: 138 affective, 683 schizophrenic (16 per cent.: 84 per cent.).

Other factors which may be thought to affect the prognosis of schizophrenia in Africans as compared with Europeans, are differences in the structure of the brain as reported by Vint (11) and the prevalence of physical diseases (12, 13, 14, 15, 16) such as syphilis, tuberculosis, under-nutrition, helminthic infestation and liver damage. The serum protein of Africans (7) has also been shown to differ significantly from that of Europeans. Intelligence, another factor thought to be of possible importance in the prognosis of schizophrenia, was investigated in the African by Oliver (17) who reported findings that suggested a lower average than is the case in Europeans; his work has however been criticized by Biesheuvel (18) and Marais (19).

Finally, there are environmental factors (20) of a psychological or emotional nature; these have not yet completely been excluded as of possible

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importance in the precipitation of a proportion of schizophrenic psychoses; it is only for a century that the South African Bantu have been in close contact with Europeans and it is generally recognized that they are at present in the acute stages of adjustment to a peaceful co-existence with the white people. Under such unsettled circumstances it may be expected that feelings of insecurity and emotional conflicts will be all too common. There is evidence (3, 4, 21, 22) which suggests that mental disorder is commoner among detribalized natives than among those who are tribalized, and psychoses into the development of which environmental factors entered, have been thought to show a better prognosis than those arising endogenously (23, 24).

Considering the foregoing, the findings of Linford Rees (25) and others (24) as regards the relative merits of E.C.T. and of insulin coma, in the treatment of European schizophrenics from a stable community, cannot, without further evidence, be accepted as applicable to present-day Africans. A study of the results of convulsive therapy in the Bantu in its present state, should therefore not be without some interest and consequently an attempt was made during the period 1952-1954, to establish the value of a common method of E.C.T. in schizophrenic Bantu women, and to compare the results with those reported in the case of Europeans. The work was carried out at the Tower Hospital, Fort Beaufort, Eastern Cape Province. In the mental examination of the patients, interpreters often had to be used, and the values of the findings in the sphere of cognition are therefore probably lower than would have been the case otherwise. Before describing the technique of the investigation, the prognosis of schizophrenia in Europeans will be reviewed briefly, to facilitate a comparison of results subsequently.

THE PROGNOSIS OF SCHIZOPHRENIA IN EUROPEANS

The best method of treatment in this disease remains a subject of controversy after nearly 25 years of insulin and convulsion therapies and even the prognosis without treatment is not yet fully agreed upon. Nevertheless much evidence in elucidation of the problem does exist now. According to Shepley (29) and McGregor, "endogenous schizophrenia" characterized by cardiovascular hypoplasia, general asthenia and poorness of sex differentiation has a much poorer prognosis than the "exogenous type". Gold and Chiarello (30) found that gradual onset and long duration of illness indicated a poor prognosis, and sudden onset, short duration of illness and the presence of exogenous precipitating factors, were associated with a good prognosis.

Linford Rees (25) found that sudden onset and duration of less than one year, stable previous personality, and broad interests indicated a good prognosis, and gradual onset, unstable personality, simple and hebephrenic types, a poor prognosis, with either E.C.T. or insulin.

Alexander (31) stressed the time factor in judging results, and arbitrarily selected a period of 30 days after the last treatment, as the upper limit of time following treatment, during which remissions should be attributed to its specific influence, and found that many patients recovered after that period was over. Zubin (32) decided that the minimum essentials for comparability of two groups are, age of onset, duration of disease, sex and diagnosis. He thought that suitable rating scales before and after treatment, to determine the degree of improvement, might be the ideal.

Gillies (33), reviewed the subject and concluded that 25 per cent. of cases ended in severe deterioration, 25 per cent. in marked personality defect, 25 per

cent. in mild defect and 25 per cent. recovered; he quoted Bleuler's study of 500 patients over a period of 15 years. Cook (34) concluded that statistical results of treatment in schizophrenia rested on too fluid a basis to be of any scientific value. According to him Muller (35) gave the average spontaneous remission rate for unselected cases of all types and duration of schizophrenia as being probably between 15 and 20 per cent. He pointed out that figures for recovery in cases of less than one year's duration varied from 40 per cent. to 70 per cent. for insulin treated cases and, 44 per cent. to 91 per cent. for cardiazol treated cases as reported by different workers. He concluded that it was probably justifiable to assume that between 55 and 60 per cent. of cases of schizophrenia treated with convulsions during the first year of their illness may be expected to remit sufficiently to return to their previous place in society. He added however that any complacency as to the results of convulsion therapy in schizophrenia must be shaken by the analyses of results at the New York state hospitals by Malzberg (1938), Pollock (1939) and Ross and Malzberg (1939), and which showed only very poor results: recovered and greatly improved 37.6 per cent. with insulin, 14.7 per cent. with conservative methods, and 11.5 per cent. with metrazol convulsive therapy.

Linford Rees (25) reported the results of E.C.T., of electronarcosis and of insulin shock in 160 schizophrenics, and found that insulin was the only treatment which gave immediate results significantly better than the ultimate results of conservative methods in schizophrenia. This confirmed the work of Mayer-Gross (36) carried out at the Maudsley Hospital.

It seems justifiable to conclude therefore, that in European schizophrenics whose psychosis had lasted 1 to 2 years, the spontaneous remission rate is about 25 per cent. and that with insulin this can be doubled; the value of convulsion therapy is open to more doubt, some workers having claimed equally good results for it whereas others found it to be of no value in producing recovery. However, the criticism of the insulin method made by Bourne (38), should not be disregarded.

METHOD OF PRESENT INVESTIGATION

Rating scales and item sheets were used after the method of Linford Rees (25, 27, 28) and the patients were divided into three groups:

- (1) Fifty female Bantu schizophrenics admitted in 1943, before convulsion therapy was used at the Tower Hospital.
- (2) Twenty-nine female Bantu schizophrenics admitted in 1953 and treated with 30 shocks at the rate of 2 per week.
- (3) Forty-one female Bantu schizophrenics admitted in 1953, 40 of whom were treated with 15 shocks at the rate of two per week. All these patients were free from appreciable physical disease on admission, had a negative blood Wassermann, and in the case of groups 2 and 3, an E.S.R. within normal limits or not significantly raised. The data as regards age and duration of psychosis were probably not very accurate, for reliable histories were difficult or impossible to obtain. The terms Bantu, African, and native, are used synonymously and do not include Asiatics or Cape Coloureds.

Each patient in groups 1 and 2 had a form on which was reflected mainly in numerical terms her age, duration of psychosis, history and clinical status. In the assessment of the latter, the rating scale and item sheet were used routinely. The numerical expression of such factors as age and family history of mental illness, etc., was used in order to allow sorting the cases by means

of Hollerith cards. The following items on the form were similarly rated (0=absent, 1=mild, 2=moderate, 3=severe): Family history of mental illness, personal history of conditioning towards maladjustment, pre-psychotic personality with abnormal traits, previous mental ill health, signs of physical ill health on admission, and history of possible psychological causative factors. The European influence rating was derived as explained further on. The speed of onset of psychosis was rated as follows: 1=slow, 2=moderate, 3=sudden.

Case 59 (group 3), was the only patient admitted during this period, who made a spontaneous recovery before E.C.T. was started.

The form used to reflect and record the data for each case, is printed below.

Age	CASE	Civil State
Family History of Mental Illness	(reflected in numerical terms)
Personal History of Conditioning Toward Maladjustment	(reflected in numerical terms)
Pre-Psychotic Personality With Abnormal Traits		(reflected in numerical terms)
European Influence Rating	(reflected in numerical terms)
Previous Mental Ill Health	(reflected in numerical terms)
Duration of Psychosis	(reflected in numerical terms)
Speed of Onset of Psychosis	(reflected in numerical terms)
Signs of Physical Ill Health on Admission	(reflected in numerical terms)
History of Possible Psychological Causative Factors		(reflected in numerical terms)

**MENTAL STATE BEFORE AND AFTER TREATMENT
(Rated Numerically)**

Rating Scale Items	Before E.C.T.	After 15	1 Week After	1 Month After
Behaviour				
Introversion				
Intellectual Disconnection				
Emotional Disconnection				
Conduct Disconnection				
Paranoid Disposition				
Type of Delusion				
Type of Hallucinations				
Ideas of Passivity/Influence				
Hypochondriasis				
Depression				
Elation				
Emotional Tension				

CLINICAL DIAGNOSIS

The apparatus used for treatment was an "Electric shock machine model P.S.-1" (Electro-Physical Laboratories, Inc., New York) and it delivered

alternating current derived from a mains supply of 220 volts. A major fit was induced on two days per week until the total of 30 or 15 had been reached. The average voltage used was 100 to 130 and the average timing was $\cdot 4$ of a second. Muscle relaxants were not given to these patients but premedication with atropin gr. 1/100 and paraldehyde dr. 2 'per os' was a routine.

Before setting out the results of E.C.T. in groups 2 and 3, the results of ordinary mental hospital care without E.C.T. in a group of schizophrenic Bantu women admitted to the Tower Hospital during 1943 will be given. As stated, those with a positive blood Wassermann, and those with appreciable physical disease on admission, were excluded from the group. In addition, all those who died within the first twelve months after admission were excluded, for it was assumed that probably they were in poor health on admission. This procedure was thought to be necessary because in the series of cases (groups 2 and 3) treated with E.C.T. ten years later, exclusion on physical grounds was based on consideration of the E.S.R., in addition to findings on simple physical examination. All data relating to this group of patients, naturally had to be collected from their office files only.

It was found that a total of 57 female schizophrenics, free from appreciable physical disease on admission, according to their records, and with negative blood Wassermanns, had been admitted during 1943, of these, 7 died during the first fifteen months, apparently mostly as a result of pulmonary tuberculosis, and this left a total of 50, from which group, cases were sorted with the aid of a Hollerith machine and cards, to match with cases from the two groups of patients similarly selected and treated with E.C.T. ten years later.

In Table I below are set out the 50 cases, together with their ages as stated on their admission documents (not absolutely reliable), the alleged duration of their psychoses and an estimate of the intensity of European influences to which they had been subjected, based upon knowledge of the area where they lived; a clinical diagnosis is given, and their condition (in terms of a rating scale score) fifteen months and ten years after admission.

The following are the simple rating scales which were used:

European Influence Rating Scale:

(a) *Area from whence:* Reserve: 0. Rural or Village: 1. Urban: 2.

(b) *Knowledge of English and Afrikaans:* Native only: 0. Unilingual: 1. Bilingual: 2. Maximum points obtainable: 4.

Behaviour Rating Scale:

1. Discharged "recovered": 9 points.
2. Discharged "improved" and working, and behaving well at the time: 8 points.
3. Discharged "on leave" and behaving and working well at the time: 7 points.
4. Still in hospital:
 - (a) Well behaved: 3 points. Working well: 3 points.
 - (b) Indifferently behaved: 2 points. Indifferent worker: 2 points.
 - (c) Poorly behaved: 1 point. Poor worker: 1 point.
 - (d) Very poorly behaved: 0 point. Not working: 0 point.

Behaviour was assessed from the routine monthly and three-monthly notes kept on record and with the rating scale of Rees in mind, e.g. "Indifferent behaviour" signified that the patient was not troublesome and her habits were correct but signs of abnormality were present.

"Poor behaviour" meant troublesome over- or under-activity.

"Very poor behaviour" meant very troublesome over- or under-activity.

Abbreviations Used in Tables:

Rec.	=	recovered.
Imp.	=	improved.
a.a.	=	after admission.
E.I.R.	=	European Influence Rating.
R.S.S.	=	Rating Scale Score.
S.S.	=	Simple Schizophrenia.
C.S.	=	Catatonic Schizophrenia.
P.S.	=	Paranoid Schizophrenia.
H.S.	=	Hebephrenic Schizophrenia.
U.S.	=	Unclassified Schizophrenia.
d=days; m=months; w=weeks; y=years.		

From Table I it is evident that 7 of the group of 50 recovered spontaneously within fifteen months and that the average duration of stay in hospital for these recovered patients was 8.1 months. Only one of these patients (Case 49, No. 3664), subsequently relapsed and recovered twice during the ten years following her first admission. There is no evidence that any of the remaining six were re-admitted to any of the mental hospitals in the Union of South Africa during the ten-year period following their first admission; five of the seven were traced and found to be still maintaining their recovery ten years after admission.

TABLE I
Bantu Schizophrenics Not Treated Specifically
(Admitted in 1943)

Case	Number	Age	Psychosis Duration	E.I.R.	Diagnosis	R.S.S. 15 m. a.a.
1	FN. 2317	35	?	3	U.S.	1
2	FN. 2312	30	?	0	C.S.	1
3	FN. 2377	30	?	2	U.S.	0
4	FN. 2301	49	6 m.	0	C.S.	0
5	FN. 2356	30	2 w.	2	C.S.	1
6	FN. 2387	34	1 y.	1	U.S.	0
7	FN. 2370	35	?	3	C.S.	2
8	FN. 2328	50	4 d.	0	H.S.	0
9	FN. 2332	40	?	3	C.S.	0
10	FN. 2243	33	3 m.	0	P.S.	1
11	FN. 2285	20	7 m.	1	C.S.	1
12	FN. 2381	31	3 m.	0	C.S.	2
13	FN. 2376	24	?	3	C.S.	3
14	FN. 2351	40	3 m.	1	U.S.	3
15	FN. 2296	24	?	1	U.S.	0
16	FN. 2280	25	1 w.	2	H.S.	1
17	FN. 2225	30	?	3	C.S.	3
18	FN. 2306	36	?	3	C.S.	1
19	FN. 2234	38	?	3	U.S.	1
20	FN. 2246	28	2 y.	2	U.S.	0
21	FN. 2302	25	?	0	U.S.	3
22	FN. 2220	30	?	0	H.S.	4
23	FN. 2223	33	?	0	C.S.	0
24	FN. 2230	40	?	0	P.S.	1
25	FN. 2251	16	?	0	C.S.	0
26	FN. 692	25	6 w.	3	C.S.	3
27	FN. 693	35	?	1	H.S.	3
28	FN. 596	22	?	0	C.S.	3
29	FN. 731	31	?	0	U.S.	3
30	FN. 695	30	2 w.	3	C.S.	2
31	FN. 2276	50	?	2	C.S.	2
32	FN. 2265	57	?	3	C.S.	2
33	FN. 2826	55	?	2	U.S.	1
34	FN. 2257	30	?	2	C.S.	0
35	FN. 2285	20	3 y.	0	C.S.	0
36	FN. 2288	45	2 y.	1	C.S.	0
37	FN. 2289	25	4 y.	2	U.S.	1

TABLE I—Continued

Case	Number	Age	Psychosis Duration	E.I.R.	Diagnosis	R.S.S. 15 m. a.a.
38	FN. 2278	35	2 m.	2	C.S.	1
39	FN. 2331	20	?	3	C.S.	9 (Rec. 9 m. a.a.)
40	FN. 2345	22	3 d.	2	U.S.	9 (Rec. 8 m. a.a.)
41	FN. 2343	20	1 w.	3	H.S.	9 (Rec. 15 m. a.a.)
42	FN. 2378	30	2 w.	0	U.S.	9 (Rec. 3 m. a.a.)
43	FN. 2374	35	2 m.	3	P.S.	5
44	FN. 2295	24	1 m.	2	U.S.	5
45	FN. 2307	18	1 m.	1	U.S.	5
46	FN. 2359	25	4 d.	2	C.S.	9 (Rec. 3 m. a.a.)
47	FN. 2315	40	2 d.	3	C.S.	9 (Rec. 7 m. a.a.)
48	FN. 2316	32	?	2	C.S.	0
49	FN. 3664	29	1 m.	0	C.S.	9 (Rec. 2 m. a.a.)
50	FN. ?	22	?	1	H.S.	1
51	FN. 2321	35	1 w.	0	H.S.	Died 9 m. a.a.
52	FN. 2294	35	6 y.	1	C.S.	Died 11 m. a.a.
53	FN. 2339	45	7 m.	3	P.S.	Died 7 m. a.a.
54	FN. 2373	37	3 d.	1	U.S.	Died 6 m. a.a.
55	FN. 2365	42	?	1	U.S.	Died 8 m. a.a.
56	FN. 2363	36	4 y.	0	C.S.	Died 7 m. a.a.
57	FN. 2279	25	?	1	C.S.	Died 14 m. a.a.
Totals	—	1,533	760 w.	76	—	129
Means	—	30.6 y.	30 w.	1.52	—	2.58

ANALYSIS OF RESULTS

The following Tables reflect the results of E.C.T. in groups 2 and 3.

With reference to Tables II and III, it should be explained that modification of the simple scale used for group 1 (Table I) had to be introduced in rating cases one month after termination of E.C.T.; this was on account of the fact that no patient was discharged until 2 months after E.C.T. in order to ensure that sudden relapses did not take place at home; hence no patient was given a score of 9, and a score of 8 signified a complete recovery, and a score of 7 a nearly complete recovery. In other respects the rating was as for group 1, Table I. By "recovery" was meant, complete absence of symptoms in a patient who was working and behaving well, and by "nearly recovered" was meant, an almost complete absence of symptoms in a similar patient.

TABLE II

Female Bantu Schizophrenics treated with E.C.T. Groups 2 and 3 are combined; compare with Group 1, Table I, where the same simplified Rating Scale was used

Case	Number	Age	Psychosis Duration	E.I.R.	Diagnosis	Simplified R.S.S. 1 m. After E.C.T.	Simplified R.S.S. 15 m. a.a.
1	FN. 3777	34	6 m.	2	C.S.	1	2
2	FN. 3826	17	5 m.	2.5	P.S.	2	2
3	FN. 3823	30	?	0	P.S.	1	4
4	FN. 3840	50	2 y.	0	P.S.	2	8 (Imp.)
5	FN. 3852	20	18 m.	0.5	C.S.	1	1
6	FN. 3813	40	6 m.	1	P.S.	0	4
7	FN. 3856	25	?	2	C.S.	4	9 (Rec.)
8	FN. 3853	38	1 w.	3	C.S.	2	5
9	FN. 3782	50	3 y.	0	P.S.	3	2
10	FN. 3855	30	?	0.5	P.S.	8 (Rec.)	9 (Rec.)
11	FN. 3862	21	7 m.	0	U.S.	7 (G.I.)	9 (Rec.)
12	FN. 3863	40	6 m.	3	P.S.	4	9 (Rec.)
13	FN. 3870	25	1 m.	4	U.S.	5	9 (Rec.)
14	FN. 3868	40	1 m.	1.5	U.S.	1	1
15	FN. 3867	29	2 m.	1.5	C.S.	0	9 (Rec.)

TABLE II—Continued

Case	Number	Age	Psychosis Duration	E.I.R.	Diagnosis	Simplified R.S.S. 1 m. After E.C.T.	Simplified R.S.S. 15 m. a.a.
16	FN. 3865	27	3 m.	3·5	U.S.	3	7
17	FN. 3829	26	1 m.	0·5	C.S.	8 (Rec.)	9 (Rec.)
18	FN. 3871	47	3 w.	2·5	U.S.	4	4
19	FN. 3872	23	9 m.	1	C.S.	4	9 (Rec.)
20	FN. 3854	23	2 w.	2	C.S.	4	5
21	FN. 3879	30	4 d.	0·5	P.S.	8 (Rec.)	9 (Rec.)
22	FN. 3885	23	3 y.	1·5	S.S.	2	1
23	FN. 3709	31	1 y.	2·5	P.S.	1	0
24	FN. 3828	36	2 m.	0	C.S.	4	6
25	FN. 3877	40	4 d.	0	C.S.	2	2
26	FN. 3873	50	2 w.	0	U.S.	1	2
27	FN. 3892	32	6 m.	3·5	P.S.	8 (Rec.)	9 (Rec.)
28	FN. 3893	22	6 m.	3	C.S.	1	1
29	FN. 3898	25	5 d.	1	U.S.	1	2
30	3897	40	6 m.	1	U.S.	0	2
31	3895	30	7 m.	4	P.S.	7 (G.I.)	9 (Rec.)
32	3902	20	1 y.	1·5	S.S.	1	4
33	FN. 3911	25	2 m.	1	C.S.	3	6
34	FN. 3915	17	3 y.	0·5	C.S.	1	1
35	FN. 3933	30	?	0	U.S.	5	9 (Rec.)
36	FN. 3916	39	2 w.	1·5	C.S.	3	4
37	FN. 3919	29	3 d.	2·5	P.S.	8 (Rec.)	9 (Rec.)
38	FN. 3923	36	?	2	U.S.	2	1
39	FN. 3926	40	2 y.	0	C.S.	1	0
40	FN. 3931	18	5 d.	2·5	U.S.	3	8
							(Disch. "I")
41	FN. 3936	32	5 y.	0	P.S.	2	8
							(Disch. "I")
42	FN. 3963	35	3 d.	2	C.S.	0	2
43	FN. 3937	35	2 m.	1·5	U.S.	5	2
44	FN. 3940	40	?	1·5	U.S.	3	6
45	FN. 3939	26	15 m.	1	S.S.	4	5
46	FN. 3941	26	?	0·5	U.S.	0	2
47	FN. 3942	28	3 w.	1	U.S.	0	2
48	FN. 3946	30	2 m.	1·5	U.S.	6 (G.I.)	9 (Rec.)
49	FN. 3880	30	?	1	C.S.	3	2
50	FN. 3954	34	6 m.	0	C.S.	0	2
51	FN. 3949	40	1 w.	2	P.S.	2	4
52	FN. 3956	35	4 d.	1	C.S.	4	4
53	FN. 3957	40	3 m.	1·5	U.S.	8 (Rec.)	5
54	FN. 3958	30	2 m.	3	P.S.	1	7 (O.L.)
55	FN. 3955	18	2 y.	0	C.S.	4	7 (O.L.)
56	FN. 3960	35	1 y.	0	C.S.	2	4 (O.L.)
57	FN. 3961	25	?	0	H.S.	0	0
58	FN. 3962	36	?	1·5	U.S.	0	4
59	FN. 3930	21	2 d.	3	P.S.	(Rec. spontaneously)	
60	FN. 3969	39	4 m.	3	U.S.	4	6 (O.L.)
61	FN. 3947	40	2 m.	0	C.S.	0	0
62	FN. 3977	28	1 m.	0·5	C.S.	0	4
63	FA. 3983	23	6 y.	0·5	C.S.	1	1
64	FA. 3987	20	3 m.	0	U.S.	1	7 (O.L.)
65	FA. 3998	38	8 m.	1·5	C.S.	1	2
66	FA. 3990	24	4 m.	0	C.S.	0	0
67	FA. —	31	1 m.	0	P.S.	1	4
68	FA. 3999	44	2 d.	3	P.S.	4	2
69	FA. 4000	35	2 w.	1·5	C.S.	3	6 (O.L.)
70	FA. 4006	30	4 y.	2	C.S.	0	0
Totals (69 cases)		2,196	572 m.	93·5	N/A	185	309
Means (69 cases)		31·3	9·3 m.	1·3	N/A	2·67	4·47
Totals (45 cases of less than 1 year's duration)		1,452	120 m.	71·5	N/A	134	221
Means (45 cases of less than 1 year's duration)		32·2	2·6 m.	1·5	N/A	2·97	4·91

TABLE II—*Continued*
No E.C.T. Given

	Age	Psychosis Duration	E.I.R.	Diagnosis	Simplified R.S.S. 1 m. After E.C.T.	Simplified R.S.S. 15 m. a.a.
Totals (20 cases of less than 1 year's duration)	611	134 w.	30	N/A	N/A	84
Means (20 cases of less than 1 year's duration)	30	6·7 w.	1·5	N/A	N/A	4·2
All cases (50 Totals)	1,533	760 w.	76	N/A	N/A	129
All cases (Means)	30·6	30 w.	1·52	N/A	N/A	2·58

Comparing group 1 with groups 2 and 3 combined (Tables I and II), and considering all cases, it can be seen that of the 50 cases in group 1, 7 recovered within fifteen months of admission and that the average period these spent in hospital was 8·1 months. Of the 69 cases in groups 2 and 3 combined, 7 cases recovered within one month after E.C.T., and the average period spent in hospital by these patients, was 7 months. Considering only those cases who were alleged to have been abnormal for less than one year before admission, it is found that of 20 in group 1, 6 recovered within fifteen months of admission and that these spent an average period of 8 months in hospital, whereas of 45 cases in groups 2 and 3 combined, 6 recovered within one month of termination of E.C.T. and spent an average of seven months in hospital. (The 7th case relapsed before she could be discharged.)

From a comparison of the mean rating scale scores of these groups, it is also seen that the score of the treated groups one month after termination of E.C.T., was no better than the score of the untreated group, 15 months after admission.

As the groups (1 and "2 and 3 combined") are very similar, it may be concluded that no evidence was found to indicate that E.C.T. (one fit induced twice per week) gave better results than conservative methods. However, the matter was further investigated by the selection of two highly similar groups from groups 1, 2 and 3, by the method to be described.

With the aid of a Hollerith machine, it was possible to sort out 21 patients from groups 2 and 3 combined, who could be matched with 21 patients from group 1, as regards age, duration of psychosis and European influence rating. All patients were, of course, similar as regards sex, clinical diagnosis, and absence of appreciable physical abnormality. These two groups were named group 4 and group 5, respectively (see Table III), and were used to compare the results of E.C.T. with those of no specific treatment.

As it was assumed that only those who recovered within one month of termination of E.C.T., did so as a direct result of the treatment (x), the cases in group 4 were rated one month after termination of E.C.T. and the same simplified rating scale was used for these two groups, as in the case of group 1 (Table I), but with the slight modification mentioned.

With a critical ratio of less than 1, it cannot be said that there was a significant difference between the results of group 4 one month after E.C.T., and the results of conservative institutional care in group 5, 15 months after admission; what advantage there was lay with the latter group.

Moreover, those who recovered in the untreated group were discharged within an average period of 6.2 months, whereas in group 4 the two who recovered did not leave hospital in less than 5 months. It cannot therefore be said that E.C.T., in the way given, appreciably hastened the discharge of patients in group 4, as compared with those on conservative treatment in group 5. With courses of 30 fits given at the rate of two fits per week, E.C.T. may actually delay the discharge of patients who recover spontaneously during the course.

On the whole therefore, it may be again concluded, that E.C.T. (one fit induced twice per week until 15 or 30 had been given) has not been shown definitely to produce better results than the conservative hospital treatment of ten years before. Valuable, though short-lived immediate effects of E.C.T. are of course not being taken into account when making this statement.

TABLE III
E.C.T. compared with Conservative Treatment. Matched Groups Used

Case	Group 4 (E.C.T.) Simplified R.S.S. 1 m. After E.C.T.	Case	Group 5 (No E.C.T.) Simplified R.S.S. 15 m. a.a.
34	1	35	0
2	2	11	1
66	0	49	9
48	6	44	5
62	0	42	9
37	8	46	9
22	2	37	1
54	1	30	2
28	1	26	3
67	1	10	1
53	8	12	2
30	0	6	0
69	3	16	1
1	1	38	1
65	1	14	3
8	2	43	5
60	4	47	9
26	1	8	0
4	2	4	0
9	3	36	0
64	1	45	5
Total Cases=21 Total Score=48 Mean Score (m.1)=2.3 S.D. (σ_1)= $\sqrt{5.34}$		Total Cases=21 Total Score=66 Mean Score (m.2)=3.1 S.D. (σ_2)= $\sqrt{10.45}$	

$$C.R. = \sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}} = .94$$

The figures in Tables IV and V suggest that E.C.T. improved the conduct of the group as a whole, but that 15 E.C.T.s had a better immediate effect than 30, and that the score one month after 30 E.C.T.s was hardly better than the score immediately after 15. It may be concluded from this that 30 E.C.T.s given bi-weekly have not been shown to have a better effect than 15, given

TABLE IV

E.C.T. given Bi-weekly to Group 2 until a Total of 30 Major Fits had been Induced

Case	R.S.S. (Rees) Before E.C.T.	R.S.S. (Rees) After 15th E.C.T.	R.S.S. (Rees) 1 Week After 30th E.C.T.	R.S.S. (Rees) 1 Month After 30th E.C.T.	Simplified R.S.S. 15 Months After Admission
1	44	35	17	34	2
2	30	28	31	32	2
3	32	31	32	29	4
4	22	30	51	40	8
5	41	40	44	38	1
6	34	30	26	30	4
7	43	40	32	15	9
8	24	10	49	16	5
9	22	20	17	22	2
10	14	13	51	7	9
11	36	10	9	5	9
12	32	28	25	10	9
13	40	19	4	4	9
14	37	28	33	19	1
15	53	8	51	52	9
16	30	22	50	3	7
17	51	14	0	0	9
18	22	35	22	4	4
19	37	14	33	26	9
20	48	21	32	8	5
21	33	8	0	0	9
22	40	32	31	37	1
23	26	13	24	21	0
24	47	26	29	26	6
25	33	33	41	28	2
26	21	19	12	15	2
27	15	16	5	0	9
28	17	10	23	20	1
29	33	12	9	26	2
Totals	958	645	784	566	149
Means	33.0	22.2	27.0	19.5	5

bi-weekly. Nor do the mean scores fifteen months after admission indicate that such benefits as resulted were better maintained in the group treated with the longer of the two courses; the critical ratio in this respect (less than 1) is not significant either.

TABLE V

E.C.T. given Bi-weekly to Group 3 until a Total of 15 Fits had been Induced

Case	R.S.S. (Rees) Before E.C.T.	R.S.S. (Rees) 1 Week After 15th E.C.T.	R.S.S. (Rees) 1 Month After 15th E.C.T.	Simplified R.S.S. 15 Months After Admission
30	16	17	19	2
31	9	3	0	9
32	35	21	19	4
33	41	4	32	6
34	39	36	26	1
35	25	24	4	9
36	27	28	26	4
37	30	10	4	9

TABLE V—Continued

Case	R.S.S. (Rees) Before E.C.T.	R.S.S. (Rees) 1 Week After 15th E.C.T.	R.S.S. (Rees) 1 Month After 15th E.C.T.	Simplified R.S.S. 15 months After Admission
38	16	21	22	1
39	40	40	22	0
40	24	24	14	8
41	19	24	19	8
42	32	31	31	2
43	30	14	4	2
44	20	11	12	6
45	22	29	9	5
46	31	35	38	2
47	32	34	36	2
48	23	3	1	9
49	37	36	39	2
50	40	37	36	2
51	19	15	31	4
52	29	0	10	4
53	22	0	0	5
54	27	17	13	7
55	37	4	1	7
56	36	12	22	4
57	25	27	38	0
58	23	26	25	4
59	No E.C.T. given—Spontaneous recovery			
60	17	10	5	6
61	43	17	38	0
62	40	36	37	4
63	40	26	30	1
64	35	34	27	7
65	39	27	31	2
66	40	22	19	0
67	26	28	27	4
68	20	34	22	2
69	34	26	21	6
70	41	38	42	0
Totals	1,197	881	852	160
Means	24.5	21.5	20.8	4.0

As in the case of group 2, group 3 shows a better score one month after termination of treatment than one week after it, but here the difference is less marked.

Taking, from groups 2 and 3, only those cases with a psychosis of duration less than one year before admission, it is found that their mean, age, etc., are as follows:

Means	Group 1a (21 Cases) 30 E.C.T.s	Group 2a (24 Cases) 15 E.C.T.s
Age	31.6 years	32.8 years
Duration of psychosis	3.0 months	2.3 months
E.I.R.	1.7	1.4
R.S.S. (Rees) before admission	34.1	29.0
R.S.S. (Rees) 1 week after E.C.T.	23.8	19.6
R.S.S. (Rees) 1 month after E.C.T.	17.0	20.1
R.S.S. (Simplified) 15 months after admission	5.42	4.41

TABLE VI
Comparison of Cases Treated with 30 and 15 E.C.T.s Respectively. Matched Groups Used

Group 6 (30 E.C.T.s)										Group 7 (15 E.C.T.s)									
Case	Rees Behaviour Treatment	Rating 1 Week After Treatment	Scale 1 Month After Treatment	Simple R.S.S. 1 Month After Treatment	Simplified R.S.S. 15 Months After Admission	Case	Rees Behaviour Treatment	Rating 1 Week After Treatment	Scale 1 Month After Treatment	Simple R.S.S. 1 Month After Treatment	Simplified R.S.S. 15 Months After Admission								
5	41	44	38	1	1	34	39	36	26	1	1								
2	30	31	32	2	2	40	24	24	14	3	8								
11	36	9	5	7	9	66	40	22	19	0	0								
21	33	0	0	8	9	33	41	4	32	3	6								
19	37	33	26	8	9	45	22	29	9	4	5								
22	40	31	37	2	1	63	40	26	30	1	1								
28	17	23	20	1	1	54	27	17	13	1	7								
25	33	41	28	2	2	67	26	28	27	1	4								
24	47	29	26	4	6	61	43	17	38	0	0								
14	37	33	19	1	1	52	29	0	10	4	4								
6	34	26	30	0	4	30	16	17	19	0	2								
1	44	17	34	1	1	65	39	27	31	1	2								
8	24	49	16	2	5	60	17	10	5	4	6								
18	22	22	4	4	4	51	19	15	31	2	4								
(14 cases) Totals ..	475	388	315	43	55	(14 cases) Totals ..	422	272	304	25	50								
Means ..	33.8	27.7	22.5	3.0	3.9	Means ..	30.1	19.4	21.7	1.78	3.6								
S.D. ..	—	—	—	$\sqrt{\frac{97}{14}}$	—	S.D. ..	—	—	—	$\sqrt{\frac{30}{14}}$	—								
C.R. ..	—	—	—	1.52	—	C.R. ..	—	—	—	1.52	—								

One month after termination of treatment, 4 of the 21 in group 1(a) were fit for discharge as compared with 2 of the 24 in group 2(a). From the above data it can be seen that the two groups were very similar and that one month after treatment the group treated with 30 E.C.T.s had an advantage in the number of cases fit for discharge, but not a significant advantage in the rating scale scores. The advantage may however merely be apparent, and due to the fact that group 1 cases had two months longer in which to recover, their course of treatment having lasted for four, and not for two months, as in the case of group 2. Moreover one (21), of the four cases, was symptom free after the seventh, and one (17) after the 15th E.C.T.; a third (19) was very much improved after the 15th E.C.T. Only Case 27 first recovered within one month of the 30th E.C.T., so that there is little to suggest that the course of 30 E.C.T.s was responsible for the advantage in recoveries shown by group 1 as compared with group 2.

To aid in deciding if 30 E.C.T.s are more effective than 15, in the treatment of schizophrenia, two groups (6 and 7) were matched with the aid of a Hollerith machine. Group 6 was selected from the patients in group 2 and group 7 from those in group 3. They were matched for age, duration of psychosis, European influence rating, behaviour rating scale score (Rees), introversion, disconnection (emotional, intellectual and conduct), paranoid disposition and affective disturbance (depression, elation, emotional tension), being a modified item sheet similar to the one used by Rees.

They were rated for improvement, by using the Rees behaviour rating scale, as well as the same simplified rating scale referred to in Table II, one week and one month after treatment.

The figures in Table VI will indicate that there was little difference between the scores of the two groups before treatment, and one month after treatment, on the Rees scale. Group 6 had a score indicating more abnormality than group 7, one week after treatment, and this was probably due to the greater number of fits induced in the former group, as many convulsions are known to cause some confusion, a state of euphoria, and memory disturbances which are all transitory. Using the simple rating scale, there is a critical ratio of only 1.5, hence it cannot be said that the difference in results between these two groups was significant, and it may not be concluded that a longer course was shown to be better than a shorter course of E.C.T. in schizophrenia.

TABLE VII
Alteration of Symptoms After E.C.T. in Bantu Schizophrenics

Symptomatology	Number of Cases	Rating Before E.C.T.		1 Week After E.C.T.		1 Month After E.C.T.	
		Total	Mean	Total	Mean	Total	Mean
Introversion	60	203	3.3	155	2.5	153	2.5
Intellectual Disconnection ..	51	149	2.9	114	2.2	95	1.8
Emotional Disconnection ..	60	164	2.7	128	2.1	133	2.2
Conduct Disconnection ..	55	134	2.4	99	1.8	104	1.9
Paranoid Disposition ..	40	82	2.0	50	1.2	46	1.1
Depression	10	11	1.1	6	0.6	1	0.1
Elation	8	11	1.3	3	0.3	0	0.0
Emotional Tension ..	18	21	1.1	12	0.6	9	0.4

Only cases who were rated on all three occasions, and only those who scored at least 1 at the first rating, are reflected in Table VII.

The figures indicate that on the whole mild degrees of depression or of elation, present in a few cases, were dispelled after E.C.T.; and this was more evident one month after termination than one week after. Emotional tension was likewise, but not as completely, relieved.

Introversion was alleviated after E.C.T. in so far as a "moderate" rating for the group as a whole was converted into a "mild". It is noteworthy that there was no appreciable difference one week and one month after termination.

A "mild" paranoid disposition rating for the group as a whole was converted into a "very mild", one week and one month after E.C.T.

Intellectual, emotional, and conduct disconnection were improved somewhat after E.C.T., but hardly significantly so. (C.R. not calculated.)

The figures in Table VII suggest that only symptoms of affective disorder were significantly improved after E.C.T., but paranoid disposition symptoms also seemed to diminish. There is no suggestion that improvement in any other respect was due to the E.C.T., and as no control group was used, no definite conclusions could be reached.

TABLE VIII
The Onset of Improvement during E.C.T. of Bantu Schizophrenics

Time During E.C.T. Treatment At Which Improvement First Appeared	All Cases (Groups 2 and 3)			Recovered or Greatly Improved Within 1 Month of Termination		
	Group 2	Group 3	Total	Group 2	Group 3	Total
After 1st	0	2	2	0	1	1
After 2nd	1	3	4	0	0	0
After 3rd	3	0	3	0	0	0
After 4th	0	3	3	0	0	0
After 5th	0	2	2	0	1	1
After 6th	1	4	5	0	0	0
After 7th	1	0	1	1	0	1
After 8th	1	0	1	1	0	1
After 9th	0	2	2	0	0	0
After 10th	0	1	1	0	1	1
After 11th	0	0	0	0	0	0
After 12th	0	0	0	0	0	0
After 13th	0	0	0	0	0	0
After 14th	0	0	0	0	0	0
After 15th	2	4	6	2	1	3
After 16th-30th ..	6	0	6	2	0	2
No improvement at any stage	14	19	33	N/A	N/A	N/A
Totals	29	40	69	6	4	10

The figures in Table VIII do not indicate clearly that failure to respond early to E.C.T. is a sign of poor prognosis. However, improvement, if it occurs, seems to take place earlier during the course of E.C.T. more often than later.

From a comparison of the ten cases which were recovered or greatly improved one month after E.C.T., with the ten patients who were least affected by the treatment, certain conclusions may be drawn. (Refer Tables IX and X.)

The average duration of psychosis in the unimproved group is much greater than in the improved and recovered group, and the degrees of introversion and of disconnection were also greater in the case of the former group.

TABLE IX

Cases which Recovered or Improved Greatly within One Month of Termination of E.C.T.

Case	Age	Duration	E.I.R.	Intro- version	Discon- nection	Restless- ness	Paranoid Disposition	Affective Disturb- ance	
10	..	30	?	0.5	2	3	4	3	2
11	..	21	7 m.	0.0	4	4	4	2	2
17	..	26	1 m.	0.5	4	3	5	0	2
19	..	23	9 m.	1.0	3	3	4	1	2
21	..	30	4 d.	0.5	3	3	0	3	0
27	..	32	6 m.	3.5	3	1	1	1	0
31	..	30	7 m.	4.0	2	1	0	2	0
37	..	29	3 d.	2.5	4	2	0	3	2
48	..	30	2 m.	1.5	3	2	0	1	1
53	..	40	3 m.	1.5	4	2	0	2	1
10 cases	291	—35 m.	15.5	32	24	18	18	10	
Means	29.1	—3.5 m.	1.5	3.2	2.4	1.8	1.8	1.0	

TABLE X

Cases which were the Least Influenced by E.C.T. (Group 9)

Case	Age	Duration	E.I.R.	Intro- version	Discon- nection	Restless- ness	Paranoid Disposition	Affective Disturb- ance	
4	..	50	2 y.	0	5	4	3	4	2
5	..	20	18 m.	0.5	3	3	0	0	0
22	..	23	3 y.	1.5	4	2	0	0	0
46	..	26	?	0.5	4	3	0	0	0
47	..	28	3 w.	1	4	3	0	0	1
50	..	34	6 m.	0	4	4	0	0	1
49	..	30	?	1	4	3	0	0	0
57	..	25	?	0	5	3	1	0	0
62	..	28	1 m.	0.5	3	4	3	0	2
70	..	30	4 y.	2	4	3	3	1	0
10 cases	294	11 y.	7.0	40	32	10	5	6	
Means	29.4	1.3 y.	0.7	4	3.2	1	0.5	0.6	

The number of cases with paranoid disposition was 9 in the improved as compared with 2 in the unimproved group.

Restlessness, European influence rating and affective disturbance, were all greater in the improved group than in the unimproved group. It may therefore be concluded that the following factors signify a poor prognosis: Duration of one year or more, high introversion rating, high disconnection rating, absence of restlessness, absence of paranoid disposition, low affective disturbance rating (agitation, elation, depression). The following, it may be concluded, are of good prognostic significance: Duration of less than 4 months, restlessness, paranoid disposition, affective disturbance (apprehension, elation or depression).

SUMMARY AND CONCLUSIONS

1. The symptomatology of schizophrenia in Africans has not been shown to differ clearly or fundamentally from that in Europeans. The possibility of a significant difference in prognosis is discussed and the factors which may influence this are reviewed, as well as the published results of insulin shock and convulsion therapy in the schizophrenia of Europeans.

2. A common method of E.C.T. is evaluated in 69 schizophrenic Bantu women using a group of 50 as controls. An item sheet and rating scales are employed and the results subjected to statistical verification.

3. The result of this investigation should not suggest that more intensive E.C.T., over a shorter period, is not worth a trial, or that valuable short-term benefits are not obtained with E.C.T., in Bantu schizophrenics.

4. E.C.T. as outlined did not produce appreciably better results one month after termination of treatment than conservative methods, fifteen months after admission (refer Tables II and III). Treatment consisting of 30 convulsions given at the rate of two per week, may actually delay the discharge of patients who recover spontaneously. Nor has it been shown that a course of 30 convulsions at the rate of 2 per week benefits more than one of 15 only, given at the same rate (refer Table VI).

5. Spontaneous recoveries in a group of 50 female Bantu schizophrenics of all ages, types and duration, amounted to 14 per cent., but in 20 of less than a year's duration, to 30 per cent., fifteen months after admission.

Muller (35) concluded that the rate of spontaneous recovery (in Europeans) was probably 15 to 20 per cent. in cases of all types and duration, and Mayer-Gross (26) reported a rate of 34.5 per cent. in cases of less than one year's duration.

6. Recoveries within one month of E.C.T. in a group of 69 female Bantu schizophrenics of all ages, types and duration, amounted to 10 per cent., but in 45 of less than a year's duration to 13 per cent.; 15 months after admission these percentages had risen to 20 per cent. and 24 per cent. respectively.

Cook (34) concluded from his review that the results of convulsion treatment in schizophrenia (of Europeans) probably amounted to a recovery rate of 55 to 60 per cent., but Rees (25) reported only 38 per cent. recoveries in cases of less than one year's duration, and Ross and Malzburg, quoted by Cook (34), reported only 11.5 per cent. of recoveries with convulsion therapy.

7. The recovery rate in schizophrenia of Europeans and Africans, with and without E.C.T., probably does not differ appreciably, even though from the present investigation it seems as if the prognosis in the Bantu is poorer. Features indicating a good or bad prognosis are similar for Europeans and Africans.

8. Of poor prognostic significance were found to be: (a) Duration of psychosis of more than one year. (b) Marked introversion and disconnection. (c) Absence of restlessness. (d) Absence of paranoid disposition. (e) Absence of tension, elation and depression.

9. Of favourable prognostic significance were found to be: (a) Duration of psychosis of less than four months. (b) Restlessness. (c) Paranoid disposition. (d) Elation, depression and emotional tension.

10. No evidence was found which indicated clearly that failure to respond early to E.C.T. is a sign of poor prognosis in schizophrenia.

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