

SOME RESEARCH INTO THE TREATMENT OF SCHIZOPHRENIA IN THE MENTAL HOSPITAL

By

A. A. BAKER, M.D., D.P.M.

Deputy Physician Superintendent

J. A. GAME

Research Psychiatric Social Worker

and

J. G. THORPE, Ph.D.

*Research Psychologist
Banstead Hospital, Sutton, Surrey*

I. INTRODUCTION

BASIC research into the aetiology, physiology and psychopathology of schizophrenia can usually be applied to schizophrenic illnesses wherever they may occur. Each mental hospital however is unique in the area which it serves, the class of patient admitted, and the treatment services and social atmosphere it provides. This means that the results of research projects concerned with the *treatment* for schizophrenia cannot be transferred so readily from one hospital to another. Hospitals treating different groups of patients in a different social atmosphere can produce widely differing results. To some extent therefore each hospital has to determine its own treatment policy, which will be dependent upon its own particular problems and facilities.

Banstead Hospital serves a population of some seven hundred thousand people, the majority coming from South-west London. This area is served by our own out-patient clinics and some patients are referred to the Teaching Hospitals. In general this means that schizophrenic patients who do come to the mental hospital are either those which have failed to respond to treatment elsewhere or those who are severely disturbed in such a way that they cannot be managed at the out-patient clinics, or the Teaching Hospital will not accept them. A considerable number of our patients are socially isolated. They are people who have come either from overseas or from distant parts of England to settle in London but have failed to do so, and now have no friends, work or contacts. At times as many as one in three of the patients on our admission wards for the under sixties are from overseas. This combination of circumstances usually means that the schizophrenic patient has a bad prognosis on the usual criteria, and often means that the prolonged follow-up and supervision which such schizophrenic patients should have will not be available. We are therefore concerned with providing an effective method of treatment for schizophrenic patients which will rapidly relieve acute disturbances, enable a high morale to be developed on treatment wards and which will be effective without long-term supervision. Although our present knowledge suggests that many schizophrenic patients will remain reasonably stable if taking chlorpromazine

indefinitely on an out-patient basis, our problem is that many of our patients will not remain under medical supervision, or will even leave the country.

In a previous paper (Baker, Game and Thorpe, 1958) we reported a comparison of E.C.T., insulin and chlorpromazine therapies as the initial treatment of schizophrenia. Our conclusions were that chlorpromazine given as a two month's course in hospital was the least effective of the three treatments because of a very high relapse rate once treatment ceased on discharge from hospital. We have already pointed out that many of our patients cannot be relied upon for one reason or another to continue taking drugs after discharge. We therefore abandoned chlorpromazine as an initial course of treatment and the project continued as a comparison of E.C.T. and insulin only. At the time of the previous report there were no significant differences in the therapeutic effectiveness of these two treatments.

The present report compares insulin and electroconvulsive therapies used on larger groups of patients than we had obtained previously, and significant differences have now emerged. Further, as it is over three years since the first patients in the scheme were discharged, we are able to give a more meaningful evaluation of relapse rates and some of the more important factors commonly associated with a good or bad prognosis.

II. METHOD

1. *Patients*

All female schizophrenic patients between 18 and 40 years of age, admitted to Banstead Hospital since January, 1956, were included in the scheme if a team of three doctors including two consultants agreed on the diagnosis of schizophrenia, and if the patient had not had previous physical treatment for that condition. As a result of this selection, most of the selected patients either had florid symptoms or a long history of illness. Few had a good prognosis on all three of the common criteria—good previous personality; recent onset and retained affect. They were all treated on the same ward by the same doctors and nurses.

(ii) *Treatments*

Two treatments were compared. The first was a course of 20 electric convulsions given at the rate of three a week (Monday, Wednesday and Friday) for the first twelve treatments, followed by two a week (Monday and Friday) up to the eighteenth treatment, followed by one a week (Wednesday) up to twenty. The treatments were administered with a standard "Ectron" machine and the "Ectonus technique" employed (Russell, Page and Jillett, 1953). Second was a course of 30 insulin comas given at a maximum rate of 1 coma daily for six days a week. All patients received 6 grains of sodium amytal on their treatment days, the E.C.T. group some 60 minutes before the convulsions and the insulin group 45 minutes before the insulin injections. Patients were also given $\frac{1}{160}$ grain of subcutaneous atropine before the convulsion or coma respectively.

(iii) *Allocation of Treatments*

Patients were allocated to one of these two treatment groups by a random selection procedure. In the event of irreversible comas or other untoward effects, where to continue that particular treatment was unwise on clinical grounds, the patient was taken out of the scheme and a more suitable treatment administered.

(iv) *Assessment of Patients*

Patients were assessed immediately preceding treatment on the Wittenborn Rating Scale (Wittenborn and Lesser, 1951), and again one week after completion of treatment. The Wittenborn scale provides ratings for psychiatric symptoms, which are then grouped to give a score on a ten-point scale for the major diagnostic types. Patients were also categorized as Paranoid, Simple, Hebephrenic or Catatonic on the basis of clinical impression and history. A prognostic rating scale was also completed.

(v) *Discharge*

When patients were interviewed one week after completion of treatment, the decision was made whether they could be discharged or whether further treatment or observation was needed. Patients were discharged if they were free from gross symptoms and were able to make reasonable plans for the future. The presence of personality defect, lack of insight, or affective flattening were not, by themselves, considered a bar to discharge. Those patients who were discharged would normally be considered to be recovered or much improved. Patients in whose case the treatment was considered to have failed were next given that treatment considered to be most suitable on ordinary clinical grounds.

(vi) *Follow-up*

Our research psychiatric social worker followed up all our patients after discharge. One of her functions was the accurate recording of relapses, which were defined as occurring if the patient was re-admitted to hospital or sought further medical help for the treatment of her symptoms. Considerable care was taken to follow up our patients, even if they left the country. This involved, for example, a lengthy visit to Ireland where eight patients have lived for some time or other since discharge.

III. RESULTS

Although the two treatment groups were selected on a random basis, it is important to compare their status before treatment on some of the variables which may be associated with a good therapeutic outcome. These comparisons are given in Tables I-IV.

TABLE I
Mean Age and Intelligence Quotient

	Insulin	E.C.T.	Critical Ratio	"p"
Number of patients	36	37		
Age in years	33	31	<1.0	NS
Age range*	18-38	19-39	<1.0	NS
Pre-treatment:				
Mill Hill Quotient	91.2	79.0	4.2	p < .01
Progressive Matrices Quotient	85.5	76.1	2.1	.05 < p < .02
Post-treatment:				
Mill Hill Quotient	94.3	85.3	3.7	p < .01
Progressive Matrices Quotient	102.1	87.4	2.8	p < .01

* Critical Ratio calculated for difference between standard deviations in age.

TABLE II

Diagnosis

	Insulin	E.C.T.	Chi-square	"p"
Simple schizophrenia ..	7	6	1.73 (3 d.f.)	NS
Hebephrenic schizophrenia ..	3	5		
Catatonic schizophrenia ..	4	6		
Paranoid schizophrenia ..	22	20		
Total	36	37		

TABLE III

Wittenborn Mean Scores before Treatment

	Insulin (36)	E.C.T. (37)	Critical Ratio	"p"
Paranoid schizophrenia ..	6.1	6.9	<1.0	NS
Schizophrenic excitement ..	4.1	4.7		
Hebephrenic schizophrenia ..	2.9	3.8		
Depression	5.1	5.0		
Anxiety	2.5	2.7		

The Wittenborn Scale resolves ratings on 55 psychiatric symptoms into 9 clusters, the scores on each of which can range from 1 to 10.

TABLE IV

Prognostic Factors

	Insulin (36)	E.C.T. (37)	Critical Ratio	"p"
Constitution19	.31	<1.0	NS
Duration of illness42	.68		
Onset48	.69		
Precipitating factor (physical)	.06	.22		
Precipitating factor (emotional)	.74	.62		
Precipitating factor (puerperal)	.29	.28		
Disturbance of affect	1.6	1.7		
Incongruity of affect	1.7	2.1		
Flattening of affect	1.8	1.4		
Body build	2.7	2.2		

FIG. 1.—*Prognostic Items.* (Scores in parentheses.)

Constitution	2 or more close relatives with schizophrenia (2)	1 close relative with schizophrenia (1)	None (0)
Duration of illness	Overt psychotic symptoms appeared more than 2 years ago (2)	Overt symptoms appeared between 1 and 2 years ago (1)	Overt symptoms appeared less than 1 year ago (0)
Type of onset of illness	Insidious—more than 1 year (2)	Insidious but less than 1 year (1)	Acute—less than 1 month (0)
Precipitating factor (physical)	Marked stress (2)	Slight stress (1)	No stress (0)
Precipitating factor (emotional)	Marked stress (2)	Slight stress (1)	No stress (0)
Precipitating factor (puerperal)	Marked stress in puerperium (1)	No marked stress in puerperium (0)	
Disturbance of affect	Severe (3)	Moderate (2)	Slight (1) None (0)
Incongruity of affect	Severe (3)	Moderate (2)	Slight (1) None (0)
Body Build	Based upon the Rees Index of Body Build for Women (Rees, 1950). Standard scores for each component calculated on the basis of present distributions. Indices above 1.0 were scored 4, between 0 and 1 were scored 3, between 0 and -1 scored 2, and between -1 and -2 were scored 1.		

The Wittenborn Scores in Table III are scaled scores based upon the scoring system developed by Wittenborn and Lesser (1951). Scores in Table IV are mean scores on the variables listed. These variables were scored as indicated in Figure 1.

The immediate results of treatment are given in Tables V–VIII.

TABLE V
Results of Treatment

	Insulin	E.C.T.	Critical Ratio	"p"
Admitted to scheme	36	37		
Completed course	27 (75%)	35 (94.5%)	2.4	.05 > p > .02
Discharged herself against advice ..	2	1		
Medical complications	2	0		
Nursing complications	4	0		
Died	0	1		
Repatriated during treatment ..	1	0		
Completed course and patient discharged	17/27 (62.8%)	29/35 (82.7%)	1.8	NS
Course failed and further treatment necessary	10/27 (37.2%)	6/35 (17.3%)	1.8	NS
Course completed and successful from total patients accepted ..	17/36 (47.2%)	29/37 (78.4%)	2.9	p < .01

TABLE VI
Mean Wittenborn Scores of Patients Who Completed Treatment

	Insulin (27)	E.C.T. (35)	Critical Ratio	"p"
Paranoid schizophrenia ..	2.9	2.4	} <1.0	NS
Schizophrenic excitement ..	2.1	2.0		
Hebephrenic schizophrenia ..	1.6	1.9		
Schizophrenic excitement ..	2.1	2.0		
Depression	3.1	2.7		
Anxiety	1.3	1.3		

TABLE VII
Mean Wittenborn Scores of Patients Discharged 1 Week After Treatment

	Insulin (17)	E.C.T. (29)	Critical Ratio	"p"
Paranoid schizophrenia ..	2.0	2.0	} <1.0	NS
Schizophrenic excitement ..	1.4	1.7		
Hebephrenic schizophrenia ..	1.2	1.7		
Depression	2.5	2.4		
Anxiety	1.1	1.2		

TABLE VIII
Mean Wittenborn Scores of Patients Requiring Further Treatment

	Insulin (10)	E.C.T. (6)	Critical Ratio	"p"
Paranoid schizophrenia ..	4.4	4.4	} <1.0	NS
Schizophrenic excitement ..	3.2	3.8		
Hebephrenic schizophrenia ..	2.4	2.8		
Depression	4.2	4.5		
Anxiety	1.7	1.7		

The patients who were discharged one week following insulin or E.C.T. are compared in Tables VII, IX, X, XI and XII. Table XII was constructed on the basis of the social worker's assessment of the patients' home environments. "Good" means materially and emotionally stable, "Poor" means homeless, and "Medium" means that some home existed.

TABLE IX

Mean Age and Intelligence Quotient of Patients Discharged 1 Week following Treatment

	Insulin (17)	E.C.T. (29)	Critical Ratio	"p"
Age	29	27		
Age range	23-37	19-38	<1.0	NS
Mill Hill Quotient	96.7	85.1	3.2	p < .01
Progressive Matrices Quotient	100.4	87.0	4.1	p < .01

TABLE X

Diagnosis of Patients Discharged 1 Week following Treatment

	Insulin	E.C.T.	Chi-square	"p"
Simple schizophrenia ..	2 (7)	5 (6)	3.5 (3 d.f.)	NS
Hebephenic schizophrenia ..	1 (3)	3 (5)		
Catatonic schizophrenia ..	2 (4)	5 (6)		
Paranoid schizophrenia ..	12 (22)	16 (20)		
Total	17 (36)	29 (37)		

Figures in parentheses refer to numbers within each category on admission.

TABLE XI

Prognostic Factors for Patients Discharged 1 Week following Treatment

	Insulin	E.C.T.	Critical Ratio	"p"
Constitution13	.30	<1.0	NS
Duration of illness27	.59		
Onset27	.70		
Precipitating factor (physical) ..	.07	.26		
Precipitating factor (emotional) ..	.80	.63		
Precipitating factor (puerperal) ..	.40	.26		
Disturbance of affect	1.54	1.67		
Incongruity of affect	1.54	2.00		
Flattening of affect	1.73	1.40		
Body build	2.20	2.30		

TABLE XII

Assessment of Environment to Which Discharged

	Insulin	E.C.T.	Chi-square	"p"
Good	6	6	2.54	NS
Medium	9	17		
Poor	2	6		

The relapse rates of those patients who were discharged one week following treatment are given in Table XIII, and in Table XIV we have plotted the duration of these patients' remissions up to the present time.

TABLE XIII
Relapse Rates

	Insulin	E.C.T.	Critical Ratio	"p"
Course successful but subsequent relapse to hospital	5/17 (29·4%)	10/29 (34·5%)	} <1·0	NS
Course successful but subsequent relapse to O.P.D.	0/17 (0%)	1/29 (3·4%)		
Total relapse following successful treatment	5/17 (29·4%)	11/29 (38%)		

TABLE XIV
Relapse Rates

	Date of Discharge						Total Relapse to Hospital
	1-6/56	7-12/56	1-6/57	7-12/57	1-6/58	7-12/58	
E.C.T.	100%	50%	40%	25%	25%	14·3%	34·5%
Insulin	75%	66%	50%	0%	0%	0%	29·4%
Critical ratio	<1·0						<1·0
"p"	NS						NS

In Table XV are given the mean ratings on the prognostic factors given in Figure 1 for the various subgroups of the two treatment groups.

TABLE XV
Relation Between Prognostic Factors and Response to Treatment

	Score Expected for Good Prognosis	Post-Treatment				After Discharge Following Successful Treatment			
		Insulin (27)		E.C.T. (35)		Insulin (17)		E.C.T. (29)	
		Success (17)	Fail (10)	Success (29)	Fail (6)	Not Re-lapsed (12)	Re-lapsed (5)	Not Re-lapsed (18)	Re-lapsed (11)
Constitution	Low	·13*	·22*	·30*	·50*	·00*	·50*	·18*	·5*
Duration of illness	Low	·27*	·67*	·59*	1·00*	·27	·25	·18*	1·3*
Onset	Low	·27*	·89*	·70*	·75*	·27	·25	·41*	1·2*
Precipitating factor (physical)	High	·07	·11	·26*	·00*	·09*	·00*	·29*	·2*
Precipitating factor (emotional)	Low	·80	·77	·63*	·75*	·91	·50	·53*	·8*
Precipitating factor (puerperal)	?	·40	·22	·26	·25	·36	·50	·12	·5
Disturbance of affect	High	1·54	1·56	1·67	2·00	1·55*	1·5*	1·58	1·8
Incongruity of affect	Low	1·54*	1·78*	2·00*	2·25*	1·55	1·5	2·30	1·7
Flattening of affect	Low	1·73*	1·78*	1·40*	1·50*	1·73	1·7	1·65	1·0
Body build	Low	2·2*	3·5*	2·3	2·0	2·0*	2·6*	2·3	2·3

* Indicates that difference between means is in accordance with expectation (though none is statistically significant). Means not asterisked are not in accordance with expectation.

IV. DISCUSSION

Tables I-IV indicate that the two treatment groups were comparable in age, diagnosis, symptom scores, and prognostic factors immediately preceding treatment. In terms of I.Q., however, the insulin group was appreciably the more intelligent, and the post-treatment quotients confirmed this finding. As the allocation of patients to treatments was done on a strictly random basis, however, this difference in I.Q.s must be attributed to fluctuations in random selection. It is not likely that the slightly superior intellectual level of the insulin group has appreciably affected the results. It is interesting to note in Table I

that the I.Q. increments following treatment are consistent with those previously reported (Thorpe and Baker, 1958), the Progressive Matrices quotients improving by some 10–17 points, and the Mill Hill by some 3–9 points.

Tables V–VII, giving the immediate results of treatment, indicate that there is a statistically significant difference between the percentages of patients completing their course of treatment. Out of 37 patients receiving E.C.T., 94·5 per cent. completed the course. Out of 36 patients receiving insulin, only 75 per cent. were able to complete the course, for the reasons given in Table V. Larger proportions of patients in the insulin group absconded, or had medical or nursing complications during their treatments. The medical complications comprised a severe prolonged coma and a series of epileptic fits during successive comas in spite of anti-convulsant drugs. The nursing complications could conceivably have been prevented if more nurses had been available. Two patients who constantly attempted to abscond while under the influence of insulin had to be taken out of the group, as well as two actively suicidal patients who were considered, after several weeks with no improvement, to be too great a risk. The failures to complete E.C.T. comprised one patient who discharged herself during treatment and another who died. Death was due to renal vein thrombosis in a dehydrated catatonic patient. The suicidal patients in this group soon lost their suicidal tendencies.

The percentages of patients who were considered fit for discharge following treatment were slightly higher in the E.C.T. group, though the difference just failed to reach the 5 per cent. significant level. Similarly, a higher percentage failed insulin therapy though the difference did not reach an acceptable significance level. It should be remembered that the slightly more favourable outcome for the insulin patients may be because only those with a better prognosis completed their course of treatment, whereas almost all the E.C.T. group were able to do so.

Of ten patients who were not well enough to leave hospital following their insulin comas, six had a course of 20 E.C.T.s and were well enough to leave one week afterwards. Three patients had a course of E.C.T., and later of Largactil, without appreciable benefit but all three were eventually discharged while taking Largactil on a maintenance basis. The last patient started a course of E.C.T. but discharged herself prematurely. Of the six patients who were not well enough to leave following their initial course of E.C.T., the two who were considered suitable for comas failed to respond, but both eventually left following rehabilitation and Largactil. The other four all responded to further E.C.T., and Largactil and were all discharged, still taking Largactil on a maintenance basis.

All patients admitted to the scheme, whether they completed their initial course or not, were eventually discharged. All those who showed signs of relapse while in hospital left while still taking Largactil, with the exception of one, who made an excellent recovery following leucotomy. Only one other patient left against advice before completing treatment.

If we regard as a total failure all patients who were either not able to complete their course or who required further treatment at the end of their course, the failure rates for insulin and E.C.T. respectively were 52·7 per cent. and 22·8 per cent. The difference between these percentages is significant at the 1 per cent. level.

The successfully treated E.C.T. patients (i.e. those discharged following treatment) were found not to differ significantly from the insulin successes in symptom scores, age, diagnosis, or in prognostic factors (Tables IX, X and XI)

though they differed significantly in I.Q. in exactly the same way as they had done before treatment was started (Table II). These findings suggest that there were no biases operating in the selection of patients for discharge following treatment in favour of one or other of the two treatments.

The findings also suggest that the two groups of successfully treated patients could be regarded as similar in their ability to maintain their remission after leaving hospital. In this connection an assessment of the home environments to which these patients were discharged was made, and no significant differences between the two groups emerged (Table XII).

The differential relapse rates (Table XIII) showed no significant differences between the two groups, although the relapse rates for E.C.T. were slightly higher throughout, whether "relapse" was taken as meaning relapse to hospital or to out-patient department.

In Table XIV, giving the lengths of time the two groups of patients had to the best of our knowledge maintained their remissions, we see that the percentages of patients relapsing to hospital is a function of the length of time the patients had been out of hospital. Of those patients discharged between January and June, 1956, 100 per cent. of those who had received E.C.T. have relapsed to hospital to date, compared with 75 per cent. of the insulin patients discharged during the same period. For both treatment groups these percentages diminished until we find that of the patients discharged during the last six months of 1958, 14.3 per cent. of the E.C.T. patients have relapsed to hospital to date, compared with 0 per cent. of the insulin patients. It is important to note that there is not a single significant difference in this Table, which serves only to point out that the relapse rates are dependent upon how long ago the patients were discharged rather than upon which of the two treatments the patients received.

An assessment of the value of the prognostic factors has been made in Table XV. It should be noted that in this Table the original groups have been subdivided into smaller groups which has probably contributed to the absence of statistically significant differences. First, to consider response to treatment, the following variables are associated with successful treatment in the direction expected—low constitutional loading, short duration of illness, acute onset, little incongruity of affect, and little affective flattening. It should be pointed out that these factors are associated with successful treatment for *both* treatment groups. The scores associated with maintained remission in the expected direction are a low constitutional loading, and a large physical element as the precipitating factor. These factors also apply to both treatment groups. The failure of the majority of the variables to show the differences which might have been expected between the insulin patients who relapsed and those who did not may be due to the very small numbers of patients in these groups.

The very high relapse rates require further comment. In general it is hospital policy here to consider that patients should return to the community as soon as possible, and we would regard a low relapse rate as evidence of undue caution in our discharge policy. There can be no doubt that regular social worker follow-up leads to a higher relapse rate as we have defined it. This is not only because all relapses are likely to be recorded, but also because a social worker will encourage relatives and patient to seek early treatment rather than await steady deterioration to social isolation. Nevertheless, we suspect that long-term relapse rates in the type of patient we are treating is likely to be very high with or without follow-up. A special report on this problem, comparing the effect of intensive with non-intensive follow-up is in preparation.

Lastly, we should note that the high relapse rate does not mean progress towards chronicity. None of the patients who have relapsed to this hospital have become "long-term" patients here or seem likely to do so. Patients admitted, who have relapsed, are often not so ill as on their previous admission nor so socially disorganized. It is our impression that rapid rehabilitation and an attempt to reintegrate with the community will help the patient to maintain her adjustment, whereas lengthy hospitalization leads to lower morale and greater dependency on others. We also note that our patients usually return to us willingly, knowing that every attempt will be made to help them back into the community. It is essential with this policy to keep in close contact with the relatives and friends where there are any, in order to relieve their anxiety and give them the maximum support. We have found the vast majority of relatives more than willing to help under these circumstances. It seems possible that the combination of physical treatments with active social re-integration is altering the long-term prognosis in this illness.

V. CONCLUSION;

It is apparent from our results that the most satisfactory treatment for this group of schizophrenic patients is E.C.T. It is much more likely that a patient given E.C.T. will complete her treatment and be discharged following it than if she is given insulin comas. This means that ward morale will be high, as the majority of patients will know that following a course of treatment they will very likely be discharged. Both patients and their relatives can make some plans with this expectation in mind. It has become apparent that insulin comas are only likely to be effective in relatively co-operative patients and even then the long-term results are no better than with E.C.T., which is a simpler procedure, causing, in our experience, less distress to the patient. In general, our findings fit in well with our previous report (Baker, Game and Thorpe, 1958) that mental hospitals in the main prefer E.C.T. to insulin for schizophrenia, while teaching hospitals prefer insulin. It is almost certain that this is due to a different type of patient being treated in a different social situation.

We would like to make it clear that physical treatments are not regarded as the only factor in recovery for our patients. At present however we know of no way of managing the type of patient we are admitting without their use. We think that both E.C.T. and insulin comas lead to a temporary disruption of the patient's relationship with the world around her, and that when she recovers from this she is able to form better human relationships in the calm emotional atmosphere of our treatment wards.

Lastly, it would seem that the prognosis for schizophrenic illnesses is being altered by modern methods of treatment and insistence on re-socialization. We are not seeing the steady deterioration which was reported in up to one-third of schizophrenic admissions in the past. On the other hand we are having a very high relapse rate for reasons which have been discussed. This study has only been running for three years and a further period of follow-up may alter our conclusions once again. It is clear that research in the mental hospital must be continuous and full recognition be given to social trends as well as immediate treatment policies.

VI. SUMMARY

Some research on the treatment of schizophrenia in a mental hospital is described.

Two groups of schizophrenic patients were formed on a random selection

basis, and were treated with 30 insulin comas and 20 E.C.T.s respectively. The results of these treatments showed that a higher proportion of insulin patients were unable to complete their course of treatment. Of these patients completing treatment the difference between the percentages of patients discharged was not statistically significant.

Assessments of a variety of prognostic factors were made and many of them proved to be consistent with expectation, though not statistically significant.

Research should be attempted which will show the influence not only of current therapeutic techniques, but also of social attitudes.

VII. ACKNOWLEDGMENTS

We are grateful to Drs. E. Caldwell, E. D. Myers, and N. Lavin and to Sisters McGowan, Hughes, Crossey and Seebell, whose work on the ward made this study possible. We would also like to thank Dr. Charlton for allowing us to publish these data.

VIII. REFERENCES

1. BAKER, A. A., GAME, J. A., and THORPE, J. G., *J. Ment. Sci.*, 1958, **104**, 436, 860-864.
2. RUSSELL, R. J., PAGE, L. G. M., and JILLET, R. L., *Lancet*, 1953, *i*, 1177.
3. WITTENBORN, J. R., and LESSER, G. S., *J. Clin. Psychol.*, 1951, **7**, 317.
4. THORPE, J. G., and BAKER, A. A., *J. Ment. Sci.*, 1958, **104**, 436, 865-869.