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LENGTH OF STAY IN MENTAL HOSPITALS AND SOME FACTORS INFLUENCING IT

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"If I come into hospital, how long shall I have to stay?" is a question to which many patients would like to know the answer: psychiatrists, too, would like to know—in terms more precise, if possible, than textbooks and experience afford. To assess the effectiveness of hospital case management or of some new treatment we need to know what ordinarily happens when patients are admitted. In an illness such as lobar pneumonia or measles, where the onset is acute, the course is consistent, and the end clear, the effect of a new antibiotic drug may fairly readily be told. In contrast with this, the onset of mental illness is often insidious, the causes less well defined, the course more variable, remittent, or relapsing, and the outcome less certain. In spite of this it is possible to predict fairly accurately what will happen to groups of patients in particular circumstances, although exact prediction for individuals is at present impossible.

National Expectation

In the Mental Health Supplement for 1950–51 (Registrar-General, 1955) the duration of stay in mental hospitals is given for patients admitted and discharged during one year. Patients admitted but not discharged in the same year are not included, and no information is therefore available of the expected duration of hospital stay for any particular group of admissions or of patients within a special diagnostic category. Nor does the later Mental Health Supplement (Registrar-General, 1958) help in this respect, for the duration of stay is given for patients discharged during the year, but irrespective of the year of their admission. For the purpose of recording the natural history of illness it would be better to choose a two-year period or longer, in order to follow what happens to patients admitted in one particular year: without this provision it is not

possible to study the fate during the next twelve months of those admitted in the last months of the year.

We are indebted to Dr. W. S. Maclay and to Mr. K. R. Creedy, statistician at the Board of Control, for kindly making tables available of the number of patients admitted to mental hospitals in England and Wales in 1953 and followed to the end of 1954, so that the length of their stay in hospital up to 12 months could be determined. This information is presented in Table I. The length of stay is given in months for percentage proportions of those admitted during 1953, according to their age, sex, and diagnosis. Because of the natural tendency to remember long-stay patients but to forget those who remain in hospital only a short while, it may not have been fully appreciated hitherto that half the patients diagnosed as schizophrenic are discharged from hospital in roughly five months. For manic-depressive illness the median duration of stay is six to eight weeks: this is so for all but the youngest group of men, in whom it is slightly longer.

To claim improved treatment or more effective case management it is necessary to show that higher proportions are discharged after stated intervals of time. A claim that a majority of schizophrenic patients were discharged in five months after some new treatment would clearly not imply any advance over present methods of management and current expectation, unless other evidence, such as greater ease of management,

TABLE I.—Duration of Stay in Mental Hospital for Patients Admitted in 1953, by Sex, Age, and Diagnosis. The Duration of Stay is Given as Months Within which the Relevant Proportion of Patients were Discharged

		Age	Percentiles								
			20%	30%	40%	50%	60%	70%	80%	90%	100%
Schizophrenia											
Men	{	10-19	2.0	3.0	3.9	4.8	5.5	7.9	12+		
		20-24	1.6	2.8	4.0	5.1	6.5	9.7	12+		
		25-34	1.6	2.5	3.6	4.8	6.2	7.3	12+		
		35-44	1.4	2.3	3.5	5.2	8.3	12+			
		45-54	1.3	2.1	3.4	5.3	9.0	12+			
Women	{	10-19	2.0	2.8	3.7	4.5	5.4	7.2	12+		
		20-24	1.6	2.6	3.6	4.7	5.8	8.2	12+		
		25-34	1.5	3.4	4.7	5.9	8.9	12+			
		35-44	1.5	2.2	3.2	4.6	6.0	10.4	12+		
		45-54	1.8	2.7	4.1	5.8	9.4	12+			
Manic Depressive											
Men	{	10-19	0.6	0.9	1.5	2.5	4.3	5.9	8.6	12+	
		20-24	0.6	0.9	1.4	1.9	2.4	2.9	4.4	6.2	12+
		25-34	0.6	0.8	1.1	1.5	1.9	2.6	4.1	7.4	12+
		35-44	0.6	0.9	1.3	1.6	2.0	2.6	4.0	6.9	12+
		45-54	0.7	1.0	1.4	1.7	2.2	2.9	4.8	9.1	12+
Women	{	10-19	0.6	0.8	1.1	1.4	1.7	2.2	4.4	10.2	12+
		20-24	0.6	0.8	1.2	1.6	2.1	2.8	4.5	7.6	12+
		25-34	0.6	0.8	1.2	1.6	2.0	2.8	4.4	7.4	12+
		35-44	0.7	1.0	1.4	1.7	2.2	3.0	5.0	9.3	12+
		45-54	0.8	1.2	1.6	2.0	2.6	3.8	5.6	12+	
Psychoneurosis											
Men	{	10-19	0.6	0.9	1.3	1.8	2.4	3.1	4.7	6.5	12+
		20-24	0.4	0.7	0.9	1.2	1.6	2.1	2.9	5.6	12+
		25-34	0.5	0.7	0.9	1.3	1.6	2.0	2.9	5.2	12+
		35-44	0.5	0.7	1.0	1.3	1.7	2.3	3.1	5.6	12+
		45-54	0.6	0.8	1.1	1.5	1.8	2.4	3.4	6.0	12+
Women	{	10-19	0.5	0.8	1.1	1.6	2.2	3.3	5.3	10.3	12+
		20-24	0.5	0.8	1.0	1.5	2.0	2.8	4.3	5.9	12+
		25-34	0.5	0.8	1.0	1.4	1.8	2.3	3.2	5.5	12+
		35-44	0.6	0.8	1.1	1.5	1.9	2.4	3.5	6.1	12+
		45-54	0.6	0.8	1.1	1.5	1.8	2.4	3.7	7.3	12+
Behaviour Disorder											
Men	{	10-19	0.5	1.2	1.9	2.7	3.9	5.2	7.8	12+	
		20-24	0.3	0.9	1.3	1.8	2.5	4.6	5.9	12+	
		25-34	0.5	0.7	1.0	1.5	2.0	2.9	5.0	9.8	12+
		35-44	0.5	0.7	1.0	1.4	1.9	2.7	4.3	8.3	12+
		45-54	0.6	0.8	1.1	1.6	2.1	3.0	5.4	12.0	12+
Women	{	10-19	1.0	1.5	2.1	2.9	4.1	5.3	7.6	12+	
		20-24	0.5	0.8	1.3	2.0	3.1	5.0	9.7	12+	
		25-34	0.5	0.8	1.2	1.9	3.0	4.7	7.2	12+	
		35-44	0.7	0.8	1.2	1.8	2.6	4.2	7.1	12+	
		45-54	0.8	1.2	1.6	2.1	3.0	5.6	8.9	12+	

lower toxicity of drugs, or diminished readmission rates, could be found to justify it.

Table I may also be used as a percentile indicator of prognosis, in that after a given time a patient clearly belongs to the remaining proportion with poorer prognosis—for example, the least hopeful 20% of schizophrenics stay at least 12 months in hospital.

In Table II the data for schizophrenia are rearranged to show what percentage of patients in the country as a whole may be expected to have left hospital after any given number of months up to one year. This may be found more convenient for certain purposes, in that individual patients may be allotted a percentile ranking with regard to national expectation for length of stay.

TABLE II.—Cumulative Percentage of Patients with Schizophrenia Discharged from Hospital by the End of Each Month

		Months												
		Age												
			2	3	4	5	6	7	8	9	10	11	12+	
Men	10-19	20	30	41	53	64	68	70	72	74	76	78		
	20-24	23	32	40	49	56	62	65	68	71	73	76		
	25-34	24	34	43	51	58	68	73	75	77	78	79		
	35-44	26	36	43	49	53	56	58	62	65	67	68		
	45-54	28	37	43	48	52	54	57	60	63	65	66		
Women	10-19	21	32	44	55	64	69	71	73	75	77	79		
	20-24	24	34	44	53	62	66	69	72	74	76	78		
	25-34	23	28	34	43	51	55	58	61	63	66	68		
	35-44	27	38	46	53	60	63	66	68	69	71	74		
	45-54	22	32	39	45	51	54	56	58	61	64	66		

Hospitals in and Around Oxford

In comparing local results with national expectation many factors complicate the picture, and some of these are illustrated below: among the more powerful are the patient's age, occupation, and physique; perhaps, too, the discharge policy and practice of particular hospitals. There is a possibility that national expectation may have changed with the increasing number of admissions in subsequent years, and that what happened in 1953 is not necessarily an accurate index of what is happening now. This, however, constitutes an argument for providing more up-to-date figures rather than a serious objection to the best available comparative evidence. Duration of stay for first and subsequent admissions may be different, although the evidence so far available suggests, perhaps surprisingly, that the difference is not significant. Figures for patients over 54 years of age have been excluded because increasing mortality progressively disturbs the picture.

Hospital Stay of 120 Men Suffering from Schizophrenia

The sample of patients with schizophrenia now to be examined in more detail comprises 120 men admitted to the four mental hospitals in the southern part of Oxford Region during the last three or so years. Each hospital was visited weekly, though there were occasional unavoidable breaks, and all the patients admitted since the last visit were examined, except the few who had left within a few days and the very few who were unwilling or so ill as to make this examination inadvisable. One of us (I.S.) made a routine mental examination; the other (R.W.P.) took anthropometric measurements. Further details of the continuing survey from which this sample has been taken may be found in *Behaviour and Physique* (Parnell, 1958), which includes an interim analysis of findings. Details include description of the methods of clinical somatometry, a statement of the diagnostic criteria employed, and discussion of the problem and relevance of diagnostic validity where single observers are concerned in a combined psychiatric and somatometric study of this kind.

In the present sample, schizophrenia was diagnosed only where characteristic disorder of the thinking process and incongruity of mood could both be discerned. The case was classified as paranoid schizophrenia if hallucinations and delusions predominated, provided that the essential thought disorder and mood incongruity were also present. In a few cases, more especially where symptoms had been modified by treatment during previous admissions, reliance was placed on case records, but where doubt existed about the diagnosis the case was excluded. Thirteen per cent. of the sample constituting the total survey (all diagnoses) were diagnosed schizophrenic, compared with 21% of hospital diagnoses in the Oxford Region as a whole, and 28% of all admissions under 65 years old in England and Wales in 1953. This suggests that the criteria used here for diagnosis are more strict than is customary in some circles. Indeed, insistence upon the presence of the symptoms we have mentioned necessarily leads to this; and it may be that we are in effect limiting ourselves to consideration of what would once have been called dementia praecox and are disregarding the less clear-cut illnesses somewhat loosely called "schizoid."

Insufficient time has elapsed for all the patients interviewed to remain in hospital (if they are going to) more than 12 months. Those with an *incompleted* hospital stay of less than 200 days are therefore excluded, leaving 120 men in the sample. Their median stay was 175 days, a figure which is a shade longer than national expectation.

In Table III patients are divided according to whether they had a short stay in hospital of less than 100 days, a medium-stay of 100-199 days, or a longer stay exceeding 200 days. Six factors show significant statistical association with length of stay. They are: age when seen, age at first mental hospital admission, occupation, somatotype, diagnosis, and the particular

TABLE III.—Factors Affecting Duration of Stay in Hospital of 120 Male Schizophrenic Patients

	n	Short Stay (Less than 100 Days)	Medium Stay (100-199 Days)	Long Stay (More than 200 Days)	χ^2 Test	Level of Significance	Contingency Coefficient
Age when seen:							
Under 25 years	59	12	17	30	$\chi^2_1 = 8.05$	2%	0.25
25 years and over	61	27	12	22			
Age at first mental hospital admission:							
Under 25 years	77	19	19	39	$\chi^2_2 = 6.73$	5%	0.23
25 years and over	43	20	10	13			
Occupation:							
Student professional	52	5	13	34	$\chi^2_3 = 23.3$	0.1%	0.42
Other	68	34	16	18			
Somatotype:							
Type Lf	37	6	10	21	$\chi^2_4 = 7.13$	5%	0.24
Other types	83	33	19	31			
Diagnosis:							
Paranoid schizophrenia	47	17	16	14	$\chi^2_5 = 6.65$	5%	0.23
Other forms	73	22	13	38			
Admission:							
First admission	67	19	18	30	$\chi^2_6 = 1.35$	Not significant	0.10
Subsequent admissions	53	20	11	22			
Hospital where treated:							
W. F., St.J., L.	58	6	15	37	$\chi^2_7 = 27.93$	0.1%	0.44
F., St.J., L.	62	33	14	15			

hospital where treatment was received. No significant difference was found between the length of stay at first and second or subsequent admissions.

Age when seen appears to influence length of stay slightly more than the age at first mental hospital admission. For first admissions these two ages are of course identical. Younger patients in this series stayed longer in hospital than older patients, and this may be related to some special feature such as the high proportion of students, because the national figures in Tables I and II do not show this relationship with age. Age of onset of illness was also examined, but no significant effect on duration of stay was found.

Occupation.—Students and professional men stayed longest in hospital; men in skilled trades came next; labourers left hospital in the shortest time. This trend is presumably related, though probably not entirely, to the higher level of intellectual performance demanded

even higher proportion of half the student-patients belonged to type Lf. The second notable finding is that, in addition to the greater disposition to schizophrenia, men of type Lf physique also take the longest time to recover. This tendency is illustrated by the somatochart, which gives lengths of stay in days for each somatotype dominance. The outer ring of figures on this chart shows the time in days within which three-quarters of the patients concerned left hospital. The inner ring shows the median length of stay. It is interesting to find that muscular physiques of type Mf. in the sector which lies diametrically opposite sector Lf. succumb to schizophrenia least often and also show the shortest stay in hospital. Patients belonging to intermediate sectors stayed for intermediate periods.

Diagnosis.—The national figures on Table I showed that schizophrenic patients stayed longer in hospital on the whole than those with other disorders. The prognostic value of formal Kraepelinian diagnosis is further supported in the present series by the fact that when schizophrenics are divided into paranoid and other forms it is found that a significantly higher proportion of paranoid cases stay a shorter time. The difference reached the 5% level of significance. But it is evident that Kraepelin's concept of schizophrenia as a formal illness is in no way irreconcilable with more dynamic views, embracing, for example, factors governing personality, varying constitutional disposition to breakdown, choice of occupation, and the effect of situational stresses on the development and amelioration of mental disturbance. The onset and course of schizophrenic illness may quite reasonably be viewed as the outcome of special internal and external stresses on persons of particular physique with varying constitutional disposition to breakdown, without prejudice to the validity of any somatic pathology that may eventually be established.

Summarizing the findings in Table III from the statistical angle, it is seen that occupation appears to exert the most powerful influence on duration of stay (contingency coefficient 0.42). The other factors—age

A SCHEMATIC TWO-DIMENSIONAL PROJECTION OF THE THEORETICAL SPATIAL RELATIONSHIPS AMONG THE KNOWN SOMATYPES

Somatochart illustrating the length of stay in days for each somatotype dominance. The outer ring of figures shows the time in days within which three-quarters of the patients in each sector left hospital; the inner ring of figures shows the median length of stay.

before recovery is recognized in professional workers, or, where recovery is incomplete, to the time which elapses before a more humble occupation is accepted. The importance of the more exacting calls made on the lives and adaptation of gifted and professional men in our present complex social and cultural environment, even if it cannot be measured, certainly cannot be disregarded. Occupational influence on length of stay was powerful: it gave a relatively high contingency coefficient of 0.42 (Table III), and is clearly responsible for a large part of the difference in duration of stay between hospitals, because many more students and professional men were treated in the Warneford Hospital than elsewhere.

Physique.—This is analysed in terms of somatotype dominance. There are two notable findings. First, the highest concentration of male schizophrenics is in sector Lf, where 31% of the total are found, compared with only 12% in the general student population at Oxford. Lf body types have a linear build with proportionately more fat than muscle. Under the age of 20 years an

TABLE IV.—Percentage of Short-stay Cases for Various Factors at Different Hospitals in 120 Men with Schizophrenia

	Hospital W.		Hospitals F., St. J., and L.	
	n	Percentage of Short-stay* Cases	n	Percentage of Short-stay Cases
Age when seen :				
Under 20 years	10	40	5	40
20-24	29	45	15	40
More than 24	19	53	42	57
Age at first mental hospital admission :				
Under 20 years	16	38	14	43
20-24	29	41	18	50
More than 24	13	62	30	57
Occupation :				
Student	36	42	5	20
Professional	7	29	3	33
Skilled trades	15	67	35	57
Labourers	0	—	17	59
Not known	0	—	2	0
Somatotype dominance :				
Mf	5	60	5	80
Ml	6	50	12	50
Lm	8	63	22	55
Lf	24	25	13	38
Fl	6	50	5	60
Fm	7	86	5	40
Central	2	(50)	0	—
Diagnosis :				
Paranoid schizophrenia	20	70	27	48
Other forms	38	40	35	51

* Short stay here refers to less than the median stay for the particular hospital group.

when seen (C.C. 0.25), age at first mental hospital admission (C.C. 0.23), somatotype (C.C. 0.24) and formal diagnosis (C.C. 0.23)—exert significant but more moderate influence.

Because of the differences found between hospitals it was decided to divide the data into two parts and examine the trends shown by age, occupation, somatotype, and diagnosis at the Warneford Hospital (W.) and separately for the group comprising Fair Mile, Littlemore, and St. John's Hospitals. This step towards internal validation revealed consistent trends for age, occupation, and somatotype (see Table IV). But there were two exceptions: formal diagnosis showed, if anything, an opposite tendency in the two samples, and this was also true of small samples (numbering 5 and 7) of type Fm physiques.

Prediction of Outcome

After the discovery of these significant factors it was decided to explore the possibility of using them to predict duration of stay. They are listed below, together with the proportion of patients in each category who stayed in hospital less than 150 days:

Age when seen	Under 20 years	47%
	20-24 years	30%
	Over 24 years	51%
Age at first mental hospital admission	Under 20 years	41%
	20-24 years	31%
	Over 24 years	56%
Occupation	Students	17%
	Professional	22%
	Skilled trades	60%
	Labourers	65%
Somatotype dominance	Sector Mf	60%
	„ MI	42%
	„ Lm	53%
	„ Lf	31%
	„ FI	40%
	„ Fm	46%
	Central (n=2)	—
Hospital	Warneford	21%
	Fairmile	59%
	St. John's	63%
	Littlemore	69%

We took the appropriate proportion under each heading for each patient, and added the five percentages together to give a score indicating probability of a short stay. The totals ranged from 130 to 295, the higher figures representing a greater chance of spending only a short time in hospital. Fifty-one men actually spent less than 150 days, and a *post-hoc* prediction to this effect was therefore made for the top 51 men whose predictive scores amounted to 230 or more. Of this group, 35 actually left hospital in time, which means that 69% could have been correctly predicted as short-stay cases, compared with an expected proportion of 43% (51/120). This is better than chance

$$\left(\frac{\text{Diff.}}{\text{S.E. Diff.}} = 2.75 \right),$$

but it falls short of useful prognostic value for individual patients. Near the middle of the predictive scale, efficiency falls to a level no better than chance, a result which may be expected when sorting into only two categories. But if we consider the 51 men with low prediction scores of less than 200—that is, patients with the greatest chance of staying a long time—we find 43 (84%) actually spending over 150 days in hospital. Since only 43% would be expected long-stay cases by chance, it seems that prediction of long stay is better than prediction of short stay. Indeed, it rises to a level which begins to be interesting prognostically, and perhaps for this reason should be discussed further.

The product moment correlation between prognostic score and actual stay in hospital gave a coefficient $r=0.55$. This expresses a moderate degree of association, part of which is of course due to the scores themselves being derived from these particular data. Although a test of internal validation was mentioned earlier, it is further necessary to validate a predictive score of this kind on similar but different cases in the same setting, and also quite separately for other hospitals. On the other hand, if none of the factors studied here had revealed significant differences in length of stay, no system of predictive scoring could have been attempted. In publishing the results, the main hope is that others may attempt to confirm them or, better still, will improve upon them. If psychiatric diagnosis is to pass from a descriptive phase to one which carries clear implications for prognosis or for treatment, diagnostic opinion must be recorded and implications tested by measuring results. For science it is not enough that time alone should tell the diagnosis; prediction is prerequisite: story-telling belongs to history and the arts.

Forms of Treatment

In estimating duration of hospital stay only those factors available when an admission diagnosis is reached have so far been considered, because prognosis must depend on such factors. Treatment has so far been ignored, though it may reasonably be expected to affect duration of stay. Patients receiving four forms of treatment commonly employed in schizophrenia (deep insulin coma therapy, electric convulsion therapy, chlorpromazine, and reserpine) were separately grouped into those receiving it and those not receiving it, in order to compare duration of stay in each group. Insulin coma therapy was associated with significantly longer stay in hospital; in the other three the results did not differ significantly. It should be remembered that the original design involved selecting a representative and nearly consecutive series of cases: it was not our primary intention to set up a comparative trial of treated patients and controls from which conclusions might be drawn concerning the effectiveness of treatment. In the present series, choice of treatment may have been determined, in part at least, by severity of illness, and the selection of severe cases for one form of treatment may easily prejudice the apparent success of that form of treatment.

In addition, the significant associations of age, occupation, and somatotype with duration of stay may well influence ease of rehabilitation as much as, or more than, individual pharmacological response, and this latter feature clearly requires separate assessment. Thus the present data do not permit an answer to the question, "Which treatment is best in schizophrenia?" Nevertheless, as the survey continues, evidence should be forthcoming whether patients with particular kinds of physique respond more quickly than others to particular forms of treatment. If patients should show varying responses to any particular drug, the question of which treatment is best suited to a particular body build may be found to overshadow the then hypothetical question of which is best for schizophrenics as a whole. The present survey is therefore being extended and supplemented with current records of response to treatment, in an attempt to distinguish response to pharmacological treatment from the later problems of rehabilitation.

In selecting duration of stay for study, no evidence has been obtained about the course of illness after

discharge from hospital. Some patients discharged themselves against medical advice; their subsequent history is not recorded, but it is clear that their early discharge could only spoil the effective prediction of long-stay cases—the group in which prediction was best. The possibility that short-stay cases might have been readmitted to hospital within 200 days of their entry into the survey was considered because it might be thought more appropriate to classify such cases among the intermediate group staying 100–199 days. There were, in fact, only four such cases, a number unlikely to alter results in any significant way. No knowledge has yet been gained of numbers readmitted later than 200 days from their entry into the survey, nor of patients' health after an interval of years: this may follow in time. The two notable advantages of considering duration of hospital stay are that it can be determined accurately in days, and that this provides a well-defined measure of an economic burden shouldered by the community.

Conclusions

It is hoped that future national statistics of mental ill-health will show length of hospital stay for groups of patients admitted in one particular year and followed for stated periods of time.

In England and Wales in 1953 the median length of hospital stay was approximately five months for schizophrenia, and six to eight weeks for manic-depressive, psychoneurotic, character, and behaviour disorders.

The length of hospital stay of 120 male schizophrenics at hospitals in and around Oxford was only slightly longer than national expectation when the group was considered as a whole.

But within the group significant variations in length of stay were found in association with occupation, age, somatotype, and diagnostic category. The factors associated with greater length of stay were student and professional occupations, youthfulness, a linear physique with little muscularity (type Lf) and non-paranoid forms of illness.

It is suggested that wider studies be made of the association between length of stay and the factors enumerated.

A prognostic scale based on the significant findings led to *post-hoc* prediction of short-stay cases that was 69% correct, and of long-stay cases 84% correct. The possible development of prognostic scales is discussed: confirmation, external validation, and, if possible, improvement are required before they can be accepted as satisfactory in practice.

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SOCIAL FACTORS INFLUENCING LENGTH OF HOSPITAL STAY OF SCHIZOPHRENIC PATIENTS

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Hospital statistics emphasize the importance to psychiatry of the chronic or long-stay patient. They show that, although the average length of stay of patients discharged in 1953 was only two months, 80% of the current population had remained continuously in hospital for at least two years (Registrar-General, 1953). A stay of this length is the most common definition of a chronic patient (Cross, 1954; Carstairs *et al.*, 1955; Drasgow, 1957). Chronic is here used to refer only to length of stay and not to a specific clinical condition. Approximately 70% of these chronic patients are diagnosed schizophrenia, and their average length of continuous residence is just over 12 years (Cross *et al.*, 1957; Registrar-General, 1958).

A mental patient's chances of discharge have in the past decreased rapidly after his second year in hospital. From national data of 1949 one can derive the approximate chances of discharge in this year for patients with varying lengths of stay (cf. tables M22 and M29, Registrar-General, 1953). In England and Wales these were 1 in 12 in the third year, 1 in 50 in the seventh year, and 1 in 200 after the twenty-fifth. That discharge rates are consistently low for schizophrenic patients after their second year of stay has been shown for both Britain and America (Danziger, 1946; Malzberg, 1952; Harris and Norris, 1955; Drasgow, 1957). The simplest explanation is that by the third year of stay only the more severely ill patients have been retained.

The present study, however, assumes that length of stay is not solely determined by severity of illness, but also by social factors and particularly by "social isolation." This was defined by absence of visits from relatives or friends during a patient's first two months in hospital. This index underestimates isolation since some long-stay patients were visited once or twice soon after admission and thereafter not at all.

Isolation may increase the likelihood of a patient's remaining in hospital, since there is no external pressure for his discharge. In addition, the attitude of the medical and nursing staff towards the discharge of such patients is likely to be more cautious.

To test these ideas, hospital admission cohorts previously employed in another study were first used (Wing *et al.*, 1959).^{*} These were schizophrenic patients admitted in 1950 and 1955 to Long Grove Hospital, an institution of 2,187 beds which serves a catchment area 25 miles away in London. The investigators showed that 37% (34% of men and 38% of women) remained continuously in hospital for two years after their admission in 1950. For 1955 admissions this figure was substantially reduced to 20% (17% of men and 26% of women). As this could not be explained by changes in age, marital status, or occupational level, the reduction was attributed partly to a change in discharge policy and partly to an improvement in treatment.

^{*}Small differences in numbers are due to the exclusion in this study of patients transferred from other mental hospitals and Broadmoor patients with sentences to serve at admission.