Of the patients showing grade 3 fundi before sympathectomy, 70% improved, and of those showing grade 4, 27% improved. Death was not delayed many months in patients whose grade 4 fundi remained unchanged by the operation. When improvement in the fundi did occur it was rapid and sustained, even though the initial fall in blood pressure might not be maintained.

The changes in the fundi, the reduction of blood pressure, and the symptomatic relief do not necessarily bear any direct relationship to the extent of the sympathectomy performed, and, as this series progressed, Adson's operation became the usual procedure for patients over 45 years of age who had severe headache. When the effect of this limited sympathectomy was substantial the second side was not done.

Whatever the extent of the sympathectomy performed there was almost always a reduction of blood pressure for some months, and this temporary reduction may be of great importance in permitting hypertrophy of the arteriolar wall, so preventing the arteriolar necrosis of malignant hypertension.

In many hypertensive patients subjected to Adson's operation Raynaud's phenomenon developed in the hands, indicating that sympathectomy exerts a general effect. This general effect may partly explain the improvement in the optic fundus and the increased survival rate after sympathectomy independent of the persistent fall of blood pressure; it is a likely explanation of the dramatic relief of headache by sympathectomy.

The low operative mortality, the 76% five-year survival rate, the 66% 10-year survival rate; the 27% rate of sustained reduction in blood pressure, the 49% rate of improvement in the optic fundi in grades 3 and 4, and the high rate of symptomatic relief, all point to the justification of sympathectomy as a useful method of treatment for hypertension. The majority of patients returned to work after the operation, kept their jobs, and were able to forget about themselves and their disease for many years.

Summary

The results of sympathectomy for a period of 4 to 10 years after operation on 212 patients suffering from hypertension are recorded.

The operative mortality was 4%.

The survival rate of 76% for five years accords with other published records of patients treated by sympathectomy and is in favourable contrast with any published series of patients treated conservatively.

A sustained reduction of diastolic pressure of more than 20 mm. Hg occurred in 27%.

Retinal improvement occurred in 49% with severe changes, and when there was no improvement in advanced retinal degeneration death was not long delayed.

Symptomatic relief after sympathectomy was the rule.

Reduction of blood pressure, if only for a few months, may prevent malignant hypertension.

Sympathectomy in hypertension gives many patients an increased expectation of a full and active life.

We thank Professor P. R. Allison, who prompted us to treat patients with hypertension by sympathectomy; Mr. H. T. Simmons, of Manchester, who demonstrated his artistry in performing sympathectomy to us; Mr. G. W.

Black for grading the fundi; Dr. J. R. H. Towers for making the follow-up in this way possible; and many colleagues who helped us during this period of rapid change in surgery and aftercare.

REFERENCES

- Adson, A. W., Craig, W. McK., and Brown, G. E. (1936). *Surg. Gynec. Obstet.*, **62**, 314.
 Grimson, K. S., Orgain, E. S., Anderson, B., and D'Angelo, G. J. (1953). *Ann. Surg.*, **138**, 532.
 Morrissey, D. M., Brookes, V. S., and Cooke, W. T. (1953). *Lancet*, **1**, 403.
 Palmer, R. S., Loofbourow, D., and Doering, C. R. (1948). *New Engl. J. Med.*, **239**, 990.
 Smithwick, R. H., and Thompson, J. E. (1953). *J. Amer. med. Ass.*, **152**, 1501.
 Wagener, H. P., and Keith, N. M. (1939). *Medicine (Baltimore)*, **18**, 317.

NATURAL HISTORY OF THE PSYCHONEUROSES

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The natural history of the neuroses is a topic which has been little reported on, although its importance as a standard against which the efficacy of treatment can be assessed is only too obvious.

The University Department of Psychiatry was opened in the General Infirmary at Leeds in 1946, and the demand for its services soon exceeded the clinic's capacity. As a result there accumulated a list of psychoneurotic patients awaiting psychotherapy, and by 1955 this list had risen to 83 patients, some of whom had been waiting for seven years. This situation offered an opportunity of studying the extent to which such patients show a tendency to spontaneous recovery.

Method

The first step was to classify the patients, and, since no "standard system" had been in use in the clinic, our classification was based on our reading of the notes. It became clear that there were three groups of patients: (1) Those in whom the symptoms were predominantly overt anxiety. These were classed as "anxiety state" (42 patients). (2) Those who suffered from hysterical conversion symptoms. These were classed as "hysteria" (19 patients). (3) Those who did not fall into either group 1 or 2. These were classed as "miscellaneous" (22 patients), and comprised the following diagnoses: depression, 5; hypochondriasis, 4; schizoid personality, 4; stammer, 3; psychopathic personality, 2; obsessional neurosis, 1; eczema, 1; impotence, 1; homosexuality, 1.

A letter was sent to each patient saying that the department was interested in how he was progressing (no mention was made of the fact that the promised treatment had not been forthcoming), and the choice of a home visit or interview at the clinic was offered.

The result of this inquiry was that 29 patients agreed to be interviewed, 15 refused to be interviewed, 13 letters were returned marked "unknown," from 20 there was

no response, 4 were dead, and 2 were in a mental hospital. Thus we had conclusive information about 50 patients (60.2%) either in the form of agreement or refusal to be visited or as having died or been admitted to a mental hospital.

The 20 patients who had failed to reply to the letter of inquiry offered an opportunity of increasing our contact if persevered with, and a second letter was therefore sent to these patients saying that the psychiatric social worker would call at a specified time, hoping to find the patient at home. The result of this manœuvre was that we were able to redistribute the 20 "non-repliers" amongst the other categories.

As the follow-up progressed, nine patients who had initially refused to be visited got in touch with the department and requested an interview, and seven patients who had consented to a visit were found to have had treatment elsewhere since being put on the waiting-list and were therefore eliminated from the inquiry.

The revised figures showed that 43 patients agreed to be interviewed, 11 refused to be interviewed, 16 were "unknown" or "had gone away," 4 had died, and 2 were in a mental hospital. Thus there were 49 contacts and 27 non-contacts.

The Interview

So far as was possible, information was obtained on the following points: (a) The patient's condition at the time of referral. (b) An estimate of his present situation and what had led to it: is the patient coping with his life situation and is he still in need of treatment? (c) The factors which appear to have played a part in any improvement that had taken place.

When the patients were seen it became apparent that they fell into four fairly well defined groups:— (1) Recovered: these were symptom-free and in full employment, and had suffered no loss in socio-economic status. (2) Improved: these were troubled only by residual symptoms, were in full employment, and had suffered no loss in socio-economic status. (3) Not improved: symptoms the same or worse and/or employment situation unsatisfactory and/or socio-economic status reduced. (4) Died.

Results

The contact and non-contact groups are compared in Table I according to diagnosis. The χ^2 test shows that there is no significant difference between the contact and non-contact groups in respect of the frequency with which the different diagnoses occur.

Recovery Rate.—For statistical purposes the "recovered" and "improved" groups were taken together and classed as "improved." Table II shows the distribution of patients according to the degree of recovery and the diagnosis. Obviously we had information on this point only in respect of the contacted patients. The overall improvement rate was 65.3% ;

TABLE I.—*Distribution of Contacts and Non-contacts According to Diagnosis*

	Anxiety State	Hysteria	Miscellaneous	Total
Contact ..	25	12	12	49
Non-contact ..	14	5	8	27
Total ..	39	17	20	76

the improvement rate for each diagnostic group was: anxiety state, 68% ; hysteria, 50% ; miscellaneous, 75%. Most psychiatrists would probably agree that the hysteric is a much more difficult therapeutic problem than the anxiety neurotic, and this is reflected in the spontaneous improvement rates. In the miscellaneous

TABLE II.—*Distribution of Patients According to Diagnosis and Degree of Recovery*

Diagnosis	Improved	Not Improved	Died	Total
Anxiety state ..	17	7	1	25
Hysteria ..	6	3	3	12
Miscellaneous ..	9	3	0	12
Total ..	32	13	4	49

group the improvement rate of 75% seems rather high, but this is probably partly accounted for by the fact that this group of 12 patients contained four depressives, all of whom recovered.

The Non-repliers

This is an interesting group. These patients failed to reply to the first letter, and persistence with them was rewarded with a further number of contacts. Twelve patients from this group of 20 agreed to be interviewed. The important point here is that had the second follow-up letter not been sent these patients would have been classed as "non-contact." This means that these patients can be regarded as a sample of a "non-contact" population—though one cannot say whether they are a representative sample or not. These patients deserve close study, since patients who fail to reply to follow-up letters are supposed to differ in some ways from those who do reply.

In Table III the 20 non-repliers are analysed and compared with the rest of the waiting-list in respect of diagnostic distribution. It shows that, if anything, anxiety neurotics tend to fail to reply more than do hysterics, but the figures are unsuitable for χ^2 test application.

TABLE III.—*Diagnoses of Non-repliers Compared with Rest of Waiting-list*

	Anxiety State	Hysteria	Miscellaneous	Total
Non-repliers ..	15	2	3	20
Rest ..	24	15	17	56
Total ..	39	17	20	76

TABLE IV.—*Distribution of Improved and Unimproved Cases in Non-repliers Compared with Rest of Contacts*

	Improved	Not Improved	Died	Total
Repliers ..	23	10	4	37
Non-repliers ..	9	3	0	12
Total ..	32	13	4	49

In Table IV we have analysed the non-repliers according to the degree of recovery shown and compared them with the rest of the contacts. The figures are not suitable for χ^2 test application.

The improvement rate for the repliers is 62.2% and for the non-repliers 75%. This would seem to indicate that the non-repliers have improved more than the repliers, but the 4 patients who died introduce a complication here, since we do not know if they had

shown any improvement in their psychiatric condition before death. With the present figures the differences are probably hardly significant.

Effect of Lapse of Time

In Table V the patients contacted are broken down according to the waiting-time for psychotherapy. The improvement rates for all five years cluster around the

TABLE V.—Number of Patients Improved, Not Improved, or Dead According to Period of Time Waiting for Psychotherapy

Waiting-time	Improved	Not Improved	Dead	Total
7 years	5 (62.5%)	2	1	8
6 " " " "	10 (66%)	4	1	15
5 " " " "	6 (60%)	3	1	10
4 " " " "	5 (71.4%)	2	0	7
3 " " " "	6 (66.7%)	2	1	9
Total	32 (65.3%)	13	4	49

60%–70% mark. This indicates that the remission rate did not alter with the passage of time after the third year—that is, any recovery which had taken place had done so during the first three years.

In Table VI the results of the first follow-up letter are tabulated according to the time waiting for psychotherapy (less the seven patients who had

TABLE VI

Waiting-time	Agreed	Refused	Returned Unknown	No Reply	Died	Mental Hosp.	Total
3 years	5 (41.7%)	0 (0%)	1 (8.3%)	4 (33.4%)	1	1	12
4 " "	2 (20%)	2 (20%)	2 (20%)	4 (40%)	0	0	10
5 " "	5 (29.4%)	4 (23.5%)	2 (11.8%)	5 (29.4%)	1	0	17
6 " "	6 (25%)	6 (25%)	5 (20.8%)	5 (20.8%)	1	1	24
7 " "	4 (30.7%)	3 (23.1%)	3 (23.1%)	2 (15.4%)	1	0	13
Total	22	15	13	20	4	2	76

treatment elsewhere). The figures are too small to permit of tests of significance, but the findings have been expressed as a percentage for each year. It is seen that the passage of time did not affect the willingness to be interviewed or the tendency to refuse. The number of those untraced tended to rise—a not unexpected result; but, curiously enough, the tendency to fail to reply fell. No conclusion can be drawn from the figures for deaths and admissions to mental hospitals.

Factors Influencing Improvement

Although the recovered and improved groups were amalgamated for statistical purposes it is more profitable to examine each group separately when the factors influencing remission are considered, since it became clear that in this respect there were important differences between the two groups.

Of the 49 patients, 15 were classed as recovered, 17 as improved, and 13 as unimproved. The four patients who died were excluded from this part of the inquiry, since there was no way of knowing whether their psychiatric condition had altered or not before their death. (Unfortunately in three of the recovered and four of the improved cases, details given under the various headings below were not obtained. Percentages have been calculated on the total number in each group, but these might have been different had the missing information been available.)

Role of General Practitioner.—Five (33%) of the recovered group imputed great merit to the supportive role of the general practitioner and his having explained

the psychiatrist's findings to them. Only 2 (15%) of the improved group expressed a similar opinion, and in the unimproved group there was no evidence of this kind, explicit or implicit, to be gathered from the interview.

Influence of Marriage.—Stability of the existing marriage or the subsequent contracting of a stable marriage had played a part in 10 (67%) of the recovered group. Two patients had in fact recovered following liberation from unhappy marriages by divorce. One had survived a marital catastrophe—the sudden removal of her husband to prison and other vicissitudes. In the improved group 6 (35%) attached great importance to the stability of the marriage partner, and in three of these cases the arrival of children had helped by giving the patient the responsibility, status, and interest of a parent. In the unimproved group the present marriage held in 9 cases (69%) only because of the stability and qualities of the spouse on whom the patient was strongly dependent.

Housing.—In the recovered group all the patients were adequately housed. In 7 (41%) of the improved cases the patients ascribed improvement to the acquisition of good housing, which could be regarded, therefore, as an operative factor in their remission. On the other hand, 9 (69%) of the unimproved group enjoyed good housing.

Employment.—In the recovered group all were working who might be expected to do so. There were no complaints of unsuitability of occupation, but several instances of successful adjustment to uncongenial occupations. The findings in the improved group were largely similar, and it was only in the unimproved group that complaints of boredom and occupational frustration were expressed, by 4 patients (30%).

Problems of Post-war Resettlement.—In the recovered group all the male patients had successfully adjusted themselves to civilian life, but 4 (24%) of the improved group were still struggling with the problems of post-war resettlement. There was no problem of this kind in the unimproved group.

Interests and Group Activities.—Of the recovered group 10 (67%) had interests beyond themselves in one sort of group activity or another—for example, political organizations, trade unions, clubs, etc. This trend was not so marked in the improved group, only 4 patients (23%) having such group interests. None of the unimproved patients had any adequate group affiliations, and all tended to live in small isolated worlds, with their thoughts and activities rarely directed beyond themselves.

Religion and Cults.—Five (33%) of the recovered patients had either moved or were moving towards a religious faith or a supportive cult of some kind—for example, theosophy, nature healing, faith healing, etc. Only 3 (18%) of the improved group showed this tendency, and it was entirely absent in the lives of the unimproved patients.

Personality.—Although there was no way of measuring this, it was clear that the recovered patients were better integrated, more able to deal with their problems, and had a stronger sense of direction in life than the improved group. This maturity was often expressed as a simple philosophy of life such as "just growing older" or "just growing up." This trend was not noticeable in either the improved or unimproved groups. The latter, in fact, contained 11 patients (85%) who had long-standing personality difficulties.

Discussion

The "natural history" of a mental disorder—that is, its course uninfluenced by any therapeutic intervention—is probably a purely abstract conception. Pollitt's (1956) paper on spontaneous remission in obsessional states is the only publication on this topic we could find, but his patients can hardly be said to have had no treatment, since nearly half were admitted to hospital.

It is, of course, true that in any social group we are all subjected to various external pressures and influences which modify our behaviour and personalities. In this sense the patients whom we followed up could not be said to have had no treatment. But it can be clearly stated that they did not undergo any formal psychotherapy given by a psychiatrist. Thus we have a group of psychoneurotic patients who on examination by a psychiatrist were considered to be in need of expert formal psychotherapy. The recovery rate without such treatment was 65.3%.

Appel *et al.* (1953) review the results of psychotherapy as reported in 11 studies and find a high degree of constancy in the recovered or much improved rates in the various papers. These recovery rates vary from 55% to 76% with one exception—namely, an improvement rate of 80% reported by Hinsie and Landis. (This figure is based on the condition of patients on discharge from an American State Hospital and does not include a follow-up study. No doubt the figure would have been lower had these patients been reviewed in a year or two.) The overall improvement rate was 66.7%. This compares strikingly with Pollitt's figures—two-thirds improved for obsessional states—and is close to our figure of 65.3%. From this it would appear that psychotherapy has little effect on the outcome in psychoneuroses, and this bears out Eysenck's (1952) surmise that the spontaneous remission rate of psychoneuroses is approximately 66%. From our data alone it could not be said that psychotherapy has no effect, however, as we have no information on the comparative *speed of recovery* of treated as against untreated patients. Again, we have no data on the *quality* of recovery of treated as opposed to untreated neurotic patients, and this presumably could be ascertained only by a long-term follow-up to determine the rate of recurrence in each group. Rogers and Dymond (1954) in a carefully planned study have attempted to overcome the problem of natural remission by using an untreated group, but their assessment of this control group takes place between six months and one year after the first interview. They have devised an ingenious method of assessing results, and claim that the treated group do better than the untreated. Our findings suggest that those patients might, with profit, be reviewed up to three years after the first interview.

Our figures show that any recovery which takes place spontaneously does so by the third year. This means that in any study on the effect of psychotherapy the assessment of the patient's condition must be made within, at most, three years of the beginning of treatment.

Recovery and improvement in our patients were clearly related to the personality of the patient. The better-integrated patients showed a higher recovery rate, and they also showed a greater capacity for adjusting to adverse and difficult circumstances. The quality of the marriage partner was an important factor also, but it

could be argued that the well-integrated person, who has a better prognosis anyway, will tend to marry a spouse of good personality. Though such features as good personality, success in work, general adequacy in the life situation, participation in group activities, and evidence of interests beyond themselves are strongly characteristic of the recovered group, one could not say that they had produced recovery. It would be more reasonable to attribute the improvement *and* the healthy mental and social life to good innate qualities of personality. This view is supported to some extent by the finding that most of our unimproved group had good housing and material social conditions but were still unable to overcome personality deficiencies.

Homans (1951) remarks that "the isolated individual is sick in mind and will exhibit disorders of behaviour, thought, and emotion," and this is borne out by the poorer social relationships in our improved and unimproved groups.

The group who failed to reply were not very different from those who did reply, although there was a slight tendency for anxiety neurotics to fail to answer follow-up letters. This might be expressed in another way—that is, there was a slight preponderance of hysterics in the patients who answered the first letter. This is not surprising considering the attention-seeking qualities of the hysterical personality.

There was no real evidence that the non-repliers had a lower spontaneous remission rate than the repliers—in fact, the trend was in the opposite direction. This should be stressed in view of the opinion sometimes expressed that the very fact of failing to reply indicates some measure of psychiatric illness.

These findings are contrary to the results published by Woodside (1955), who stated that patients who fail to reply tend to belong to certain diagnostic categories—namely, hysterics, psychopaths, and alcoholics. Such a conclusion cannot logically be drawn from the data given in her paper, since in order to do this one would have to show that there was a higher incidence of these diagnoses in non-repliers compared with the incidence of the same diagnoses in the *total* number of patients followed up.

Concerning the follow-up method, the importance of persisting in the inquiries in the face of apparent indifference from the patients was clearly shown, and we also found that the passage of time, the degree of recovery, or the fact that treatment had been promised and not given had no effect on the willingness to be followed up.

Summary

Eighty-three psychoneurotic patients who had been promised psychotherapy and who failed to receive it were followed up, and valid information was obtained on 49.

The spontaneous improvement rate was 65.3%.

Those who recovered tended to have more stable marriages and more satisfying group relationships than those who failed to recover.

There was evidence that any spontaneous improvement which takes place has done so by the third year.

There was no significant difference in respect of degree of recovery and diagnosis between those who failed to reply and those who did reply.

The willingness to be followed up was unaffected by passage of time, the failure to receive treatment, or the degree of recovery.

This survey was done at the suggestion of Dr. Max Hamilton, of the Department of Psychiatry, University of Leeds. We thank him for guidance and encouragement throughout the inquiry. We warmly appreciate the interest in the study shown by the late Professor D. R. MacCalman and Professor G. R. Hargreaves. Our thanks are also due to Miss Mary Stewart and Mrs. M. Johnson for much secretarial assistance.

REFERENCES

- Appel, K. E., Lhamon, W. T., Myers, J. M., and Harvey, W. A. (1953). *Res. Publ. Ass. nerv. ment. Dis.*, 31, 21.
Eysenck, H. J. (1952). *The Scientific Study of Personality*. Routledge and Kegan Paul, London.
Homan, G. C. (1951). *The Human Group*. Routledge and Kegan Paul, London.
Pollitt, J. (1956). *Proc. roy. Soc. Med.*, 49, 842.
Rogers, C. R., and Dymond, R. F. (1954). *Psychotherapy and Personality Change*. Univ. Chicago Press.
Woodside, M. (1955). *Ment. Hlth (Lond.)*, 14, 58.

MENSTRUATION AND ACUTE PSYCHIATRIC ILLNESSES

BY

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This investigation was undertaken to determine whether acute psychiatric admissions to hospital were in any way influenced by the premenstruum or by menstruation. For many years it has been believed that psychiatric illness was apt to exacerbate at the time of the menstrual period, and in this paper an attempt is made to determine if such a relationship exists. It has been prompted by the recognition of the premenstrual syndrome and its successful treatment (Greene and Dalton, 1953).

As there are many ways in which the acutely ill can be admitted to hospital it was decided to examine admission records of two large mental hospitals (2,470 and 2,290 beds) and the mental observation ward of a London teaching hospital, and to confine the investigation to those patients whose illness was so acute that immediate admission was sought. This meant that patients who were admitted when a bed vacancy occurred were excluded, as were those admitted through

an out-patient clinic. By this means the investigation was restricted to those whose admission was obtained because of the acuteness of their illness at the time of admission.

The sister in charge of admissions recorded the date of the patient's last menstrual period at the time of her admission. The data were obtained from statements of patients suffering from a variety of psychiatric illnesses and excluding those too ill to give reliable information. All patients with amenorrhoea exceeding 28 days were excluded.

Results

For the interpretation of results the 28 days of the menstrual cycle were divided into seven four-day periods, in which days 1-4 corresponded to menstruation, days 13-16 covered ovulation, and days 25-28 the premenstruum. It was recognized that menstruation may exceed four days, but the full menstrual flow with relief of water retention usually occurs during the first four days. The relative incidence rate represents the number of actual admissions during a four-day period compared with the expected number of admissions during a four-day period (or one-seventh of total admissions).

Fig. 1 gives the time in the menstrual cycle of psychiatric admissions for 276 patients and shows that the expected rate of admissions is doubled during menstruation. Fig. 2 gives the time of admissions of 36 attempted suicides and shows a relative incidence rate during menstruation of 2.75 or 39%. This figure of 39% of attempted suicides during menstruation compares with the figure of 36% reported by Heller in 1900, 22% by Ollerdorf in 1905, and 33% by Slavik in 1910 (quoted by Gregory, 1957), and supports the findings of MacKinnon and MacKinnon (1956) that successful suicides seem commoner during the luteal phase. Figs. 3 and 4 show that admissions during menstruation are greatly increased both for 185 patients with depression and for 114 patients with schizophrenia.

The influence of menstruation on psychiatric admissions was evenly distributed among single, married, and widowed; among nulliparous and multiparous; and among those admitted for first and for recurrent attacks. There was, however, a marked difference in age, as shown in Fig. 5. The disturbing influence of menstruation was greatest among those under 25 years of age (37%), and compares with 20% for women over 45 years. The depressive and suicidal patients were

FIG. 1.—Time of acute psychiatric admission in 276 patients.

FIG. 2.—Time in menstrual cycle of 36 attempted suicides.

FIG. 3.—Time of admission of 185 patients with depression.