On January 22, 1956, the patient was admitted to hospital with a provisional diagnosis of recurrent mammary carcinoma. Examination revealed oedema of the right arm extending to the hand, and marked scarring and telangiectasis of the right pectoral region and axilla, the result of deep *x*-ray therapy. On the antero-medial aspect of the right arm was a patchy discoloration affecting an area 7 by 5 cm. and made up of multiple dark nodules slightly elevated above skin level and varying in size (see photograph). Ulceration had not occurred and there was no tenderness. There was no clinical or *x*-ray evidence of metastases elsewhere. Being made aware of the possibility of lymphangiosarcoma presenting in this way by Dr. George Pack, of New York, who was visiting the hospital at the time, we were able to make a pre-operative diagnosis which was confirmed by biopsy.

From previous reports of this condition then available to us it seemed that radical surgery offered the best chance of survival. Interscapulo-thoracic amputation was therefore advised, but the patient would not agree to this. Local excision was performed on February 7, 1956, an oval of skin 15 by 9 cm. being removed together with the underlying fat and deep fascia. Closure of the wound was effected with the aid of a split skin graft, and healing proceeded satisfactorily.

Further examination of the excised tissue revealed that the skin was three to four times the normal thickness and that the discoloration was confined to the surface. Microscopical study showed that the thickening of the skin was due to an increase in the width of the corium. In this, and to a less extent in the upper subcutaneous tissue, neoplastic cells were scattered either singly or in groups of a few cells (Special Plate, Fig. 1), but sometimes as small masses (Plate, Fig. 2). Frequently these cells were lining spaces and channels. Some of the channels, especially those in close proximity to blood vessels, gave the impression that the lining of pre-existing lymphatics had become neoplastic; in other places they occurred as a seemingly purposeless network of vessels. Both the growth pattern and appearance of the cells were quite different from those of the original carcinoma of the breast, and were consistent with a diagnosis of lymphangiosarcoma occurring in post-mastectomy lymphoedema of the arm.

On April 1 the patient was readmitted with further nodules appearing at the lateral margin of the graft. Amputation was reconsidered, but again the patient was not agreeable. Accordingly a course of deep *x*-ray therapy was started, the final treatment being given on July 5. This led to a marked regression in the growth of the local recurrence, but, unfortunately, when the patient was last seen on July 9 nodules were detected in the area of old post-irradiation scarring in the right axilla. It was generally felt that this development must destroy any hope of controlling the tumour with irradiation. Nevertheless an attempt will be made to treat these metastases, there being at present no evidence of more distant spread.

Comment

The history and findings in this case are in accord with those previously described as occurring in lymphangiosarcoma following post-mastectomy lymphoedema. The natural history of this disease distinguishes it from other varieties of angiosarcomata. Of special interest is its association with lymphoedema in a patient who has previously been treated for carcinoma of the breast, though the nature of this relationship is obscure.

The risk of such a tumour developing is greatest in those who have survived radical mastectomy by at least five years and who may thus be regarded as having a very good chance of cure of their mammary carcinoma. The frequency of lymphangiosarcoma in this group is unknown, but its recognition as a possible fatal complication emphasizes the importance of the prevention and treatment of the swollen arm.

Summary

Lymphangiosarcoma has recently been recognized as a complication of post-mastectomy lymphoedema. Unless there is awareness of the condition it is likely to be confused with recurrent carcinoma of the breast. The characteristic features of the tumour are described and illustrated by a case report. It is hoped that appreciation of this new hazard to those who have survived a mammary carcinoma will stimulate further studies in the prevention and treatment of post-mastectomy lymphoedema.

I am indebted to Mr. Eric Langley for permission to publish this case. I wish to thank Dr. Colin Graham, who reported on the sections, and Dr. P. Corlette, of Sydney Hospital, who supervised the patient's radiotherapy.

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NATURAL HISTORY OF OBSESSIONAL STATES

A STUDY OF 150 CASES

BY

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The literature on obsessional states is mainly concerned with psychopathology and treatment by psychotherapy. Curran (1952) drew attention to an ignorance of the "natural history" of these illnesses. After pointing out that with increasing age a decreasing number of these patients were, in his experience, referred for a psychiatric opinion, he continues: "What happens to severe obsessional states as they get older? I have asked a number of experienced psychiatrists, and after humming and hawing they have, in the end, come clean and confessed that they did not know."

It has been possible to find only three follow-up studies based upon reasonably extensive material—namely, those carried out by Lewis (1936), Müller (1953), and Rüdin (1953). Rüdin has contributed a study of 130 cases, referring to the natural history, but places particular emphasis on the hereditary relationships of the illness. Lewis and Müller reported the progress of 50 and 57 patients respectively after discharge from hospital. These writings constitute the only follow-up studies based on reasonably large series of cases, and reports on the obsessional state from its onset have not been found.

Further, the information available in current textbooks on the course of obsessional states is often meagre and a striking pessimism may be noted. For example, Cecil and Loeb (1955) limit their observations on the outcome of the obsessional states to the sentence: "The prognosis of the obsessional state is poor." The present study is an attempt to provide fuller information on the natural history of the obsessional illness as a whole.

Lewis (1936) has emphasized that the essential element of an obsessional symptom is the sufferer's wish to resist the feeling of compulsion. In the present inquiry an obsessional symptom has been regarded as a recurrent or persistent idea, thought, image, feeling, impulse, or movement, which is accompanied by a sense of subjective compulsion and a desire to resist it; the event being recognized by the individual as foreign to the personality and into the abnormality of which he has insight. An obsessional state or illness is taken as one in which such defined symptoms are the dominant feature of the case.

In this study two main groups, often labelled "obsessional," were excluded. The first group consisted of patients with obsessional personality traits (the "anancastic personalities" as they are sometimes called) who developed a reaction other than that of obsessional illness, most commonly, perhaps, an anxiety state. The second group were cases in which obsessional symptoms occurred in the course of another mental illness, such as depression or schizophrenia. The differential diagnosis between obsessional illness proper and depression with obsessional features is often difficult. In this study doubtful cases were excluded, as were all cases in which the illness responded to E.C.T.

Material and Methods

The material for study, thus selected, numbered 150 patients. Of these, 69 (18 males and 51 females) had been in-patients at the psychiatric unit of St. George's Hospital at the Atkinson Morley Hospital, Wimbledon, the preponderance of female patients being due to the larger number of beds that were available for females during the relevant period. The remaining 81 patients (45 male, 36 female) had been seen and diagnosed by Dr. Desmond Curran in private practice as "out-patients." These "out-patients" had, on the whole, milder illnesses than the in-patients. Most of the severely sick out-patients seen were sent into hospital and were included in the hospital group.

It may be held that the inclusion of both out-patients and in-patients in this study helps to form a representative sample of these obsessional illnesses, but, since many of the hospital patients were admitted to the Atkinson Morley Hospital for leucotomy by Mr. Wylie McKissock, the bias here is probably in favour of severely ill patients. As is shown below, very few cases of obsessional state are admitted to or resident in mental hospitals.

Information was collected from case records, from reports kindly sent by other psychiatrists, and from data provided by psychiatric social workers; when possible, patients were interviewed personally. A questionary was designed for the follow-up. After modification in the light of a pilot run, this was sent to all patients. The obvious objection to any follow-up by means of a questionary is less valid when considering obsessional illnesses rather than any other diagnostic category; most of the forms were filled in accurately and were found to be reliable in almost all cases in which an objective check-up was available from other sources. It seems a reasonable assumption that reliable information was provided in those cases in which an objective check-up was not available; but, in order to avoid a possibly optimistic bias, in no instance was a favourable outcome assumed solely on the basis of the patient's reply to the questionary.

Age of Onset of First Symptoms

Fig. 1 shows the distribution of 141 patients according to the age at which they experienced obsessional symptoms for the first time. Owing to the episodic course of the illness, the age when the first symptoms were shown must be distinguished from the age of onset of the present illness, and this age must be distinguished from the age at which the patients sought help. In 68 patients who had had no previous attacks the first symptoms formed the present illness. The majority of patients (68%) experienced their first symptoms before the age of 25 years, and only four after the age of 45. As age increased, fewer and fewer had their first symptoms. The mean age when first symptoms developed was 21.58 years in females (standard deviation 14.46 years, standard error 1.63) and 20.16 years in males (standard deviation 11.09 years, standard error 1.41).

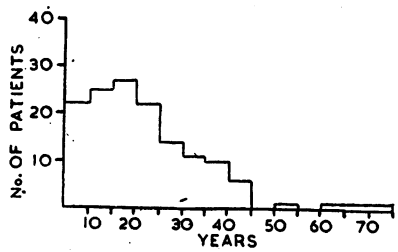

FIG. 1.—Age range in which first symptoms began.

Previous Attacks

Frequently the patient's history revealed that attacks of obsessional symptoms had occurred before the present illness, each attack ending in recovery. Of the 150 patients considered, 100 had reported previous episodes of obsessional symptoms and 82 of the latter had been sufficiently ill at the time to seek medical advice. The total number of attacks experienced by the 82 patients was 162, the approximate mean number of attacks being 2; the extremes of the range were 1 and 10 attacks (mean 1.98 attacks, standard deviation 1.56 attacks, standard error 0.17). Fig. 2 shows the numbers of patients who had one or more attacks in each age range. Ignoring the number of patients that experienced them, 28% of the previous attacks occurred between the ages of 11 and 15, 23% between 16 and 20, and 17% between 21 and 25, the peak being from 11 to 15 years of age, with its developmental associations of puberty. In general, the previous attacks were in childhood, adolescence, or early adult life rather than later.

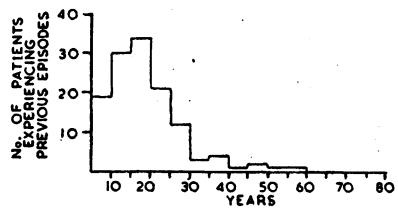

FIG. 2.—Age range in which previous episodes occurred.

Duration and Frequency of Attacks

The approximate duration of the previous episodes and the number that occurred in each patient were determined and the results recorded to show distribution (Tables I and

TABLE I.—*Duration of Episodes*

Approximate Duration	No. of Episodes Before Present Illness Began
Months	
0–	44
3–	30
6–12	54
Years	
0–	128
1–	9
2–	8
3–	6
4–	4
5–	2
6–	1
7–	1
8–	1
9–	0
10–20	2
	162

TABLE II

No. of Episodes	No. of Patients	No. of Episodes	No. of Patients
1	44	6	2
2	18	7	1
3	12	8	0
4	3	9	0
5	1	10	1

II). It is seen from these tables that 79% of the previous episodes lasted less than a year, and that in 88% of the 82 patients one to three attacks of symptoms occurred before the present illness. Mean duration of an episode is 1.09 years, standard deviation 2.1 years, standard error 0.17.

No simple relationship was found between the total duration of previous episodes a patient had suffered and his prognosis. No correlation was found between the number of previous episodes and the type of obsessional symptoms present, such as motor, sensory, etc.

Age of Onset of Present Illness

The present illness is regarded as the unremitting train of obsessional symptoms for which the patient sought advice at St. George's or privately. Fig. 3 shows the frequency distribution of patients according to their age when the present illness began. In 68 patients who had had no previous attacks this was also the age of onset of first symptoms. Half the total number of patients began their illness in late adolescence or early adult life, between the ages of 16 and 30 years, and only 7.3% began their illness after the age of 45 years. Mean age of onset of the present illness was 28.4 years, standard deviation 13.7 years, standard error 1.1. The relative expectation of developing an obsessional illness is shown in Table III.

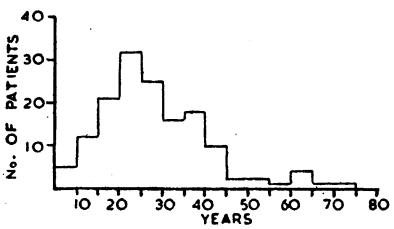

FIG. 3.—Age range in which present illness began.

TABLE III

At 20 years,		25%	of the danger is past			
„ 30	„	65%	„	„	„	„
„ 40	„	85	„	„	„	„
„ 50	„	91%	„	„	„	„
„ 60	„	94%	„	„	„	„
„ 70	„	97%	„	„	„	„

Disablement

The age at which the patient was incapacitated by his illness is known in 121 cases. The criterion used was inability to carry out accustomed work or social duties which were a significant part of the patient's life. In the hospital series, if no other evidence was available, admission to hospital was taken as the time when the patient was incapacitated. Fig. 4 shows the distribution of patients according to the age when they were incapacitated. Three-quarters of the 121 patients were incapacitated before the age of 40. Very few were disabled after 50 years of age. (Mean age of disablement 33.2 years, standard deviation 12.6 years, standard error 1.1.) Table IV shows the distribution of patients according to the duration of their present illness before they were incapacitated. Approximately half the total number of patients became disabled within a year of the onset of the illness; the remainder were incapacitated only after a considerable number of years elapsed. (Mean duration of illness to incapacity 4.7 years, standard deviation 8.1 years, standard error 0.73.)

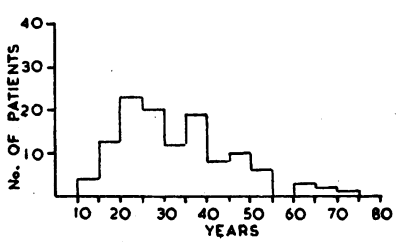

FIG. 4.—Age range in which incapacity occurred.

Precipitation of Obsessional Symptoms

The events leading to the onset of the present illness were known in 93 of the cases reviewed. These were the events considered significant by both patient and doctor and were elicited in the course of routine history-taking. Table V shows the incidence of precipitating factors in 93 obsessional patients and 90 non-obsessional admissions, the latter being selected at random from the patients admitted to the psychiatric unit at St. George's Hospital, and having an age distribution similar to that of the obsessional patients. The preponderance of sexual precipitating factors in the obsessional group is highly significant statistically.

TABLE IV.—*Approximate Duration of Illness Before Disablement in 121 Cases*

Duration	No. of Patients
Months	
0–	47
6–12	19
Years	
1–	9
2–	7
3–	3
4–	4
5–	2
6–	3
7–	3
8–	2
9–	5
10–	1
11–	0
12–	2
13–	1
14–	2
15–	5
20–	2
25–	1
30–	2
40–	0
50–60	1

TABLE V.—*Comparison Between Incidence of Precipitating Factors in 93 Obsessional Patients and 90 Non-obsessional Admissions*

Factors	Obsessional Group	Non-obsessional Group
Sexual	28	3
Betrothal	8	13
Marital	7	13
Family difficulties	0	13
Death of near relative	14	2
Occupational	12	16
School	2	1
Physical	4	13
Childbirth	7	5
Pregnancy	3	4
Puberty	1	0
Menopause	0	0
Other causes	7	7
Total	93	90

Duration of Present Illness before Patient Attended for Advice

Table VI shows the distribution of patients according to their period of suffering in the present illness before they were seen for the first time, privately or at St. George's. Approximately half the total number of patients were seen within two years of the onset of the illness. Almost a quarter were seen after ten years of suffering. (Mean period between onset of illness and attending for advice 7.5 years; standard deviation 9.3 years, standard error 0.77.)

TABLE VI.—*Approximate Duration of Illness Until First Seen in 150 Cases*

Duration	No. of Patients
Months	
0–	15
7–12	32
Years	
1–	25
2–	12
3–	8
4–	2
5–	4
6–	1
7–	4
8–	6
9–	4
10–	10
15–	10
20–	13
30–	2
40–	2
50–60	0

Patient's Progress

It was not possible to follow up all the patients of the series owing to the fact that a number had been seen only for an initial interview and some of these failed to return the questionary. In the following quantitative assessment of the patient's progress, the number of cases included in each particular aspect of the study is given.

Fig. 5 shows the distribution of patients according to the period of follow-up (101 patients). The length of follow-up is variable; the range was 3 months to 15 years, and the mean follow-up period was 3.44 years; standard deviation 2.70 years, standard error of the mean 0.27.

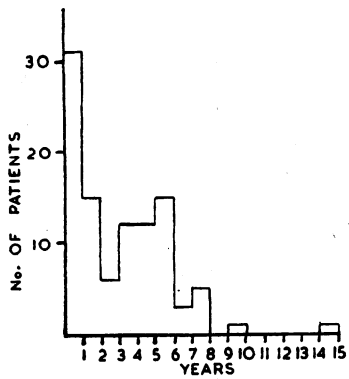

FIG. 5.—Duration of follow-up period.

A classification similar to that used by Müller (1953) was used to rate the patient's state of adaptation—namely, Group I, those who are socially adapted and symptom-free. Group II, those who are socially adapted but still experience mild symptoms. Group III, those who are poorly adapted socially but whose symptoms have improved. Group IV, those whose symptoms are worse or as severe and incapacitating as when they were first seen. Group V, those whose obsessional symptoms have been replaced by other phenomena.

Table VII shows the number of patients in each of the above categories at the termination of their follow-up period

TABLE VII

	I	II	III	IV	V	Dead	Suicide	Total
Non-leucotomized	16	24	8	17	1	1	0	67
Leucotomized ..	15	6	7	5	0	0	1	34
Total ..	31	30	15	22	1	1	1	101

(101 patients). Sixty-one of the patients followed up reached a state of social adaptation, 31 of them becoming free of symptoms. Fewer than a quarter showed no improvement and were worse.

To define more clearly the progress of patients after a definite period of follow-up, Table VIII shows the patients categorized according to their state after one or more years

TABLE VIII

	I	II	III	IV	V	Total
Progress after 1 Year or More						
Non-leucotomized	19	18	6	9	1	53
Leucotomized	12	6	7	4	0	29
Total	31	24	13	13	1	82
Progress after 4 Years or More						
Non-leucotomized	12	9	3	5	1	30
Leucotomized	4	4	4	3	0	15
Total	16	13	7	8	1	45

and four or more years of follow-up. Although after four years the sample of patients is much smaller, 21 of the 30 non-leucotomized patients had become socially adapted and 12 of these 21 were free of symptoms. The high proportion of patients who did well even after four years of follow-up is noticeable.

Duration of Illness and Prognosis

In order to show the influence on prognosis of the duration of the present illness at the time of seeking advice at St. George's or privately, the mean duration of the illness was estimated for the group of patients in each follow-up category (Table IX).

TABLE IX.—*Mean Duration of Illness in Years*

	Category at End of Follow-up Period			
	I	II	III	IV
Non-leucotomized (65 cases)	3·0	6·1	6·8	8·1
Leucotomized (33 „)	10·0	15·0	11·1	18·6
Total (98 „)	6·2	7·9	8·8	10·5

A relationship exists between the duration of the illness before seeking advice and the prognosis. It is significant statistically ($P=0.05$) that in the non-leucotomized group those who became symptom-free had shorter illnesses before they were seen than those who showed no improvement. It would therefore seem that the longer they are ill before being seen the worse the outlook. The two categories compared in the non-leucotomized group had mean follow-up periods of 3.9 and 3.3 years respectively.

Recovery in Early Years.—Further evidence to support the finding of a good prognosis in patients with relatively short illnesses is obtained from estimation of the total duration of the illness in the 61 patients who became socially adapted (Table X). The majority of those who reached this state of improvement had endured symptoms for five years

TABLE X.—*Duration of Illness and Number of Patients Reaching Social Adaptation*

Duration	No.
0– 2 years	21
2– 5 „	16
5–10 „	11
10–20 „	7
20–40 „	6
Total	61

or less. As the duration of illness increases fewer patients with a good prognosis are found. Direct inquiry into the patient's mode of improvement reveals that the intensity of symptoms gradually lessens until they become unobtrusive or are present only when the individual is fatigued or anxious.

Mental Hospital Admissions.—Inquiries at two mental hospitals, with a total of 2,545 beds, revealed that only four of the patients were diagnosed as obsessional; they were voluntary patients, and two of them had been previously leucotomized. In the series of patients studied, only four are known to have become voluntary patients. It is an interesting fact that very few obsessionals end up in mental hospitals. If they do become mental hospital patients they rarely need to stay long.

Suicide.—Only one of the 101 patients followed up committed suicide. This was a female who developed an endogenous depression four years after leucotomy for a severe obsessional illness. This patient did not entertain fears of suicide during her obsessional illness. Only two other attempts at suicide were reported in the remainder of the patients.

Schizophrenia.—The only case falling into group V after follow-up was a female patient who later developed schizophrenia.

Discussion and Summary

Incidence

Many individuals have obsessional components in their personality. It is also not uncommon for psychiatric patients to show obsessional symptoms. Obsessional illnesses as defined here, however, are rare. The 150 patients studied (69 in-patients and 81 out-patients) formed respectively under 4% of the admissions to the psychiatric unit of St. George's Hospital and fewer than 2% of the patients seen

in private practice as out-patients. This low incidence indicates to some extent the degree of selection employed. Miller (1950) comments on the rarity of extreme degrees of obsessional illness.

Age of Onset

Owing to the episodic course, the age when the first symptoms were shown must be distinguished from the age when the first symptoms of the illness for which the patient sought help began.

In 68% of 141 patients studied, the first symptoms appeared between the ages of 6 and 25 years, the mean age being 21.58 years in females and 20.0 years in males. As age increased above 20, fewer and fewer patients developed symptoms for the first time; only four did so after the age of 45 (Fig. 1). After the age of 20 there is a decreasing risk with increasing age. Either increasing age protects against the start of obsessional symptoms or the population from which patients come must diminish with age at the same rate. The age of onset of the attack which brought the patient under observation at St. George's or privately was later, the greatest frequency being between the ages of 16 and 45 (Fig. 3). Greenacre (1923) confirms these findings and states that obsessive-compulsive disorders arise usually during the active, striving periods of life and only rarely in the later years.

Episodic Course

This has been commented on by a number of authors (Greenacre, 1923; Gordon, 1926; Bumke, 1929; Lewis, 1936; Ibor, 1952), but precise figures are lacking. In no less than half the patients studied the illness ran an episodic course, with an average of two previous attacks per patient before the attack which brought the patient under observation. A history of up to three attacks was obtained in 88% of the patients who had attacks, and a history of more than three was relatively uncommon, occurring in eight patients only. The majority of these episodes occurred in childhood, adolescence, or early adult life. They were frequently short-lived, 79% lasted a year or less.

Reactivity

Reactivity to environmental factors was striking; the attacks often seemed to be precipitated by stressful situations or events. Interestingly enough, overt sexual traumata were significantly more common than in a control group of the neuroses and psychoses. The reactivity of the illness to the environment was shown by many patients throughout; thus the symptoms became more severe and prominent when anxiety and tension increased from whatever cause or when the patient's resistance was lowered by debility or fatigue. A corresponding improvement could be observed when tension was reduced by environmental or other means. In milder cases, simple reassurance alone was sometimes followed by remarkable improvement. It was also interesting to observe that patients were often less troubled by symptoms when they had to face new external difficulties in their lives. The sensitivity to external stress often seemed highly specific.

Follow-up Results

An objection may justifiably be raised when the "natural history" of an illness is said to be studied in a series of patients, many of whom have had hospital in-patient care and most of whom have had treatment of some sort or another. This objection is valid if treatment is thought to influence the long-term course of the disease. Rüdin (1953), who followed up 130 patients, thought that in only nine cases did therapy contribute towards the apparent improvement in the illness. From the present series, the impression is gained that only leucotomy, in some cases, influenced the natural course of events. It is for this reason that the leucotomized patients have been considered separately in the follow-up study.

It proved possible to follow up 101 patients for a period of from 3 months to 15 years. Of the 82 patients followed for a year or more, 55—that is, 67%—had become either free of symptoms or able to carry on a normal life. Excluding the leucotomized patients, 37 out of a total of 53 (70%) had demonstrated a similar degree of improvement or recovery.

After four or more years of follow-up, 29 out of 45 patients (64%) became either free of symptoms or able to carry on a normal life. Of the 30 non-leucotomized patients followed for this period, 21 showed this degree of improvement or recovery.

Lewis (1936) followed up 50 cases of obsessional neurosis for five or more years after treatment in hospital and found that approximately half did well. Müller (1953) found that out of a total of 57 obsessional cases followed up for 15 to 35 years 28 became symptom-free or socially adapted. Rüdin (1953) reports that 50 out of a total of 130 patients followed up for periods up to 20 years were either notably improved or apparently cured. In the light of this evidence, the obsessional state has a much better prognosis than is usually thought, and the view that it has an inevitable, gloomy outcome can no longer be held. The fact that few are admitted to mental hospitals, and that the number of patients attending for the first time falls off gradually after the age of 25 and rapidly after 40, provides indirect evidence of a favourable outcome.

When recovery took place it occurred far more commonly in the early years of the illness and much less frequently after many years had passed since the illness began. This observation, viewed with the recovery after a year or so from the previous episodes, suggests that the prognosis of the obsessional illness is related to the duration of symptoms in the present attack, the patient with a shorter period of suffering having a better prognosis than one who has been ill for many years. There is also a relationship between the prognosis and the time a patient has symptoms before seeking advice. Those who did not improve or were worse had been ill for longer periods than those who recovered.

Mode of Recovery.—With the possible exception of leucotomy, treatment was rarely followed by immediate, sustained recovery. The mode of recovery usually consisted in a gradual lessening of symptoms. The progress to recovery was seldom smooth, but was marked by a great deal of variability of symptoms during periods of anxiety and fatigue.

Development of Psychosis.—Only one patient is known to have developed schizophrenia in the present series; possibly the failure to follow up all the cases may account for this low incidence. Müller found that 10 out of 57 patients with obsessional neurosis developed schizophrenia later. Stengel (1945) has discussed and illustrated the transition of obsessional state to schizophrenia but does not indicate the frequency of this event.

It is hoped that this attempt to learn something more of the facts regarding obsessional illnesses is of more than academic interest. It is perhaps a small step towards providing a yardstick with which one may more easily compare the profound effects of modern treatments with the comparatively small influence on the disease of the more conservative methods.

I am grateful to Dr. Desmond Curran for generously allowing me the opportunity to conduct and complete this work. I thank Dr. E. Stengel for his criticism and help in translating the relevant literature. Dr Eliot Slater and Dr. Fraser Roberts gave me their expert advice on the presentation of the figures. I am grateful to those, too numerous to mention individually, who have helped me in collecting data.

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