THE NATURAL HISTORY, TREATMENT AND PROGNOSIS OF ANOREXIA NERVOSA, BASED ON A STUDY OF 38 PATIENTS

By

D. W. K. KAY, B.M., B.Ch.(Oxon), D.P.M.

and

DENIS LEIGH, M.D., M.R.C.P.

From the Bethlem Royal and Maudsley Hospitals

INTRODUCTION

SINCE the time of Sir William Gull (1874), the condition he called anorexia nervosa has been recognized as, primarily, a psychological disorder. Yet with the exception of some American contributors, it has recently received attention mainly from physicians (Ryle, 1936; Sheldon, 1937; Hubble, 1952) and from endocrinologists (Fraser *et al.*, 1941; Reiss, 1943). Its place in psychiatric semiology remains uncertain; at different times anorexia nervosa has been regarded as a neurosis, or as allied to schizophrenia, or to manic-depressive psychosis, or even as an entity *sui generis*. Recent reports have been largely concerned with three aspects of the disorder. First, with the essential features of the clinical picture, and the type of personality in whom it develops; DuBois (1949), and others for instance regard the condition as a compulsion neurosis arising in the obsessional character. Secondly, attention has been directed to its place amongst the psychosomatic disorders (Cobb, 1950), and with the inter-action of emotion, the hypothalamus, and the endocrine system. Decourt and Michard (1950) in an interesting clinico-pathological study, have discussed the amenorrhoea and loss of weight, in the light of assays of urinary sex hormones and gonadotropins. Thirdly, treatment has been re-considered, and American writers in particular have advocated psychotherapy of a more prolonged and radical kind than was formerly thought to be necessary.

The present study was undertaken principally to elucidate the prognosis. The findings have been published elsewhere (Kay, 1953). During the investigation the case-records of the patients selected for the prognostic study were examined in detail, and form the basis of the present report. It is our intention to present a critical review of the syndrome, and to particularly direct our attention to the three aspects described above.

MATERIAL AND METHODS

It is clear that a multitude of disorders may give rise to anorexia and loss of weight. The criteria on which a diagnosis of anorexia nervosa is made must therefore be explicitly stated. Nemiah (1950), in an excellent, but not entirely comprehensive review, selected patients who showed a failure to eat, weight loss, and menstrual changes, for which no evidence of gross disease had been found in a primary etiological role. The most extensive psychiatric study is that of Carrier (1939), whose monograph is based on 36 cases studied on the whole over relatively short periods. His criteria are similar to those of Nemiah, i.e. a progressive restriction of "alimentation", wasting, and amenorrhoea. Male

411

cases are excluded from both studies. It is important at once to state that these are the presenting symptoms of the disorder, any psychiatric symptomatology being given a minor role by the patient. Using these three criteria of disturbance of eating, loss of weight, and amenorrhoea, we examined the records of patients attending the Maudsley Hospital between 1932 and 1952. Thirty-four cases were found. In addition four male patients who had been diagnosed as suffering from anorexia nervosa were included. An attempt was made to contact each patient, and the results of this follow-up study have already been published (Kay, 1953). Our present review is based on our long-term knowledge of these thirty-eight cases. Attention will be directed in this paper to the hereditary background of the patients, their childhood and family situations, the illness, the treatment, and the outcome. The case histories are recorded in the Appendix.

(1) THE ILLNESS

Thirty-four patients were women, 4 men; 6 were married at the time of admission. Seventy per cent. had fallen ill before the age of 26, the majority between 16 and 20 years, 5 patients before 16, and 3 over the age of 35. One-half had been ill for 2 years or longer, 20 per cent. for over 4 years; half had already been treated in other hospitals as cases of anorexia nervosa. The mean of the lowest weights recorded was 6 stone 3 lb.

The clinical features of our cases are similar to those described by Ryle (1936), and Richardson (1939), and will not be discussed systematically. Attention will be devoted to specific aspects of the disorder.

(a) *The precipitating factors, modes of onset, and development of the disorder*

In two-thirds of our group environmental changes seem to have precipitated the illness, commonly a disturbance in inter-personal relationships (11 cases). Two patients lost their fathers by death (Case 5), or by engagement to a young woman (Case 3). Two fell ill when their favourite sisters became engaged (Cases 1, 13); three had lost their fiancés through death or broken engagements, (Cases 23, 25, 27). Two fell ill shortly after marrying (Cases 6, 17). The husband of Case 22 had just been posted overseas. Case 26 learned that her mother had become pregnant. Two other patients had been emotionally disturbed since the father died (Case 9), or left home (Case 31), two and four years respectively before the beginning of the illness proper. Eight patients (Cases 4, 9, 10, 12, 14, 19, 30, 37) fell ill immediately after or during a physical illness. This illness directly interfered with, or drew attention to eating in four cases. In Case 34, the illness began six months after an attack of jaundice, when she was advised by her doctor to avoid fatty foods. Case 11 suffered an exacerbation of symptoms following jaundice. Of the other six patients, two had just begun work for the first time; two were homesick after joining the A.T.S., one attributed her illness to the air-raids; and one had been sexually assaulted. In the remaining twelve patients, no clear-cut environmental changes could be found; amongst them are the majority of patients who dieted to avoid becoming fat.

Cobb (1950), has made "voluntary dieting" one of his criteria for the diagnosis of anorexia nervosa. In our cases, a motive was given for the dietary restriction by 16 patients (42 per cent.), (Cases 1, 3, 7, 9, 15, 16, 25, 28, 30, 31, 32, 34, 35, 36, 37, 38). Ten (Cases 3, 16, 25, 28, 30, 32, 34, 35, 37) stated that they abhorred fat people or the idea of becoming fat. Case 9, when in hospital for appendectomy said "Thank goodness for a rest", and prolonged her stay by postprandial vomiting. Three patients (Cases 16, 36, 38) felt that food harmed them in some way. Case 7 starved herself to "save money", and for religious

reasons, and Case 15 did so because "eating gave the face a high colour". Several gave more than one reason. It is clear that in many cases the alleged "reasons" were rationalizations, or indications of serious psychological disturbance. In comparing the patients who gave their reasons for not eating with those who were unable to do so, no difference in the clinical picture can be discovered, either in the course or outcome. In both groups are patients who complained of sometimes feeling hungry (Cases 3, 6, 11, 12, 15, 27, 32), or of having to force themselves to eat (Cases 21, 29, 37). No valid distinction can thus be made between patients who diet for a "reason" and despite hunger, and those who refuse food without apparent motive. A history of "voluntary dieting" probably depends on the intelligence of the patient, her ability to rationalize, and her willingness to discuss her symptoms, no less than on the psychiatrists' zeal in searching out "motives". Two patients may be contrasted; both fell ill after an elder sister became engaged; one girl (Case 1) said that by refusing to eat she hoped to force her sister's return home; the other girl (Case 13) was unable to eat owing to an insufferable repugnance for food, which she associated with dislike of her prospective brother-in-law, and especially his "disgusting eating habits". A voluntary act is, therefore, not essential to the syndrome.

The development of the illness varies greatly. Emaciation may progress rapidly and end within six months by death (Case 26); or the condition may become chronic, dating with little intermission from early or late childhood (Cases 7, 38). In the latter situation, precipitating factors cannot be identified. Moreover, admission to hospital may depend on chance events such as physical illness, both patients and relatives having become accustomed to the symptoms. Attempts at radical treatment prove ineffectual in such cases, but none the less, the patients continue to survive, and may even lead active, though restricted lives. Of nine patients (Cases 1, 4, 16, 17, 19, 23, 26, 30, 34) who had reached a low level of nutrition in 18 months or less, three eventually died. In seven the illness dated from a definite event or followed a series of physical illnesses.

(b) *Psychiatric Symptomatology*

The early symptoms, apart from anorexia and amenorrhoea, have been somewhat neglected by previous authors. Berkman (1939), in fact considered that anorexia nervosa can arise in mentally normal individuals. In fifteen of our patients anorexia and/or amenorrhoea were recorded as the first symptom of the illness. In the remainder, other symptoms were either contemporaneous (13 cases), or appeared before the anorexia or amenorrhoea (10 cases). These symptoms included: tiredness, irritability, depression, attempted suicide, headaches, insomnia, "fainting fits", phobias, loss of interest, inertia, hyperventilation attacks, concern over menstruation, abdominal sensations, bilious attacks, and constipation. In about ten patients the onset of the illness proper was difficult to date exactly. For instance, Case 20 suffered from insomnia and irritability following her father's death, but did not become anorexic until two years later. In fact, only five patients developed the syndrome in a setting apparently free from acute psychological disturbance; but these five all showed personality deviations, and in none was the course of illness particularly favourable (Cases 4, 19, 20, 30, 37). The variability and prolixity of symptoms early in the disorder suggest that loss of weight and appetite, and amenorrhoea, on which attention is later focussed, are but part of a complex emotional disturbance, with a varied psychiatric symptomatology. This has been described previously (Kay, 1953). The frequency of various symptoms is shown in

Table I, together with Slater's (1943) findings in his large mixed group of neurotic soldiers. There is fairly close agreement. Patients with anorexia nervosa are apparently contented with their physical state, and are seldom hypochondriacal. The higher rate of obsessive-compulsion symptoms may be related to the fact that more of our patients showed obsessional personality traits. The symptomatology was often mixed, or varied from time to time. Mood changes, fears, and hysterical symptoms, conspicuous in the earlier stages of the illness, tended to disappear as the typical pattern of behaviour became established, only to re-appear during the course of treatment.

TABLE I

Psychiatric symptomatology in this and in a mixed neurotic group. Figures given in percentages. Heavy type shows that differences between the groups are significant at the 1% level using χ^2 method.

	SYMPTOMATOLOGY					
	Mood change	Anxiety	Hysterical symptoms	Obsessive or Compulsive symptoms	Hypochondriasis	Organic and Psychotic symptoms
2,000 neurotic soldiers (Slater, 1943)	45	44	28	3	**41**	10
38 patients with anorexia nervosa (This study)	50	42*	40	**18**	**15**	8

Many patients can be diagnosed as suffering from hysteria (e.g. Cases 9, 17, 30), phobic (Cases 11, 16), or compulsion (Case 27) states, affective disorder (Case 14, 25), or psychopathy (Case 26), according to the predominant symptom of their illness. More often, however, the disturbance is generalized and arises in a setting of chronic maladjustment. Anorexia nervosa, as Cobb (1950) has pointed out, is a severe disorder, a "pan-neurosis". There is, however, no reason to believe that it is allied to schizophrenia, as has at times been suggested. In Case 16, this diagnosis was considered but not confirmed. Only one patient has subsequently shown schizophrenic symptoms (Case 24).

(c) *The Amenorrhoea*

In this series, amenorrhoea was reported before repugnance for food had arisen in 25 per cent. of the patients, and in another 25 per cent., the symptoms were contemporaneous. Sheldon (1937), has suggested a psychologically-determined "functional" pituitary deficiency in anorexia nervosa, because of the similarity with Simmonds' Disease. The early appearance of amenorrhoea might be accounted for on these grounds, for Hubble (1952), has shown that amenorrhoea is the most sensitive indicator of hypopituitarism. However, several objections may be put forward. Firstly, the mechanism producing the amenorrhoea must differ in half the cases, so that the patients would then fall into two

* Includes phobic states.

groups. Klinefelter *et al.* (1943), on the basis of hormone excretion studies, suggested that this was in fact true. Clinically, however, the patients cannot be distinguished solely on the criteria of early or late amenorrhoea. Neither in their previous mental health, menstrual history, psychiatric symptomatology, course or outcome, can the groups so formed be shown to differ; in particular, somatic features attributable to endocrine deficiency can no more be found in the one, than the other. Secondly, Bartels (1946), in a detailed clinical and metabolic comparison of anorexia nervosa with Simmonds' Disease, concluded that "nearly every feature" of anorexia nervosa could be accounted for by the emaciation alone. The organism might "attempt to compensate for the unfavourable metabolic conditions (i.e. the malnutrition) through changes in the mid-brain pituitary system". Thirdly, the hormone assays of McCullagh and Tupper (1940), Fraser *et al.* (1941), and Klinefelter *et al.* (1943), have shown that urinary gonadatropins (F.S.H.) are often in the normal range, and are never consistently low as in hypopituitarism. Klinefelter *et al.* (1943) based their theory of two varieties of anorexia nervosa on the different quantities of hormone excreted by different patients. But unless such differences can be shown to be independent of the patients' nutritional and psychological state at the time of assay, they cannot be accepted as indicating distinct disorders. The hormone level is in fact known to fluctuate considerably in some individuals with anorexia nervosa (Escamilla, 1949). The hypothesis of a pan-hypopituitarism, however produced, occurring in the early stages, and influencing the whole clinical picture, runs counter to the evidence.

Klinefelter *et al.* (1943), and Reifenstein (1946), put forward a different hypothesis to explain the mechanism of the amenorrhoea. The hypothalamus, under the influence of psychological disturbance, acts on the anterior pituitary to diminish production of luteinizing hormone. This mechanism may account for the so-called "psychogenic amenorrhoea" in other conditions, e.g. among probationer-nurses (McGregor, 1938), newly-joined Service personnel (Scher, 1946), and in depressive states. In such settings, there is little question of pituitary deficiency in the usual clinical sense; the mechanism of the amenorrhoea is specific, and therapy with the available anterior pituitary extracts is, as has been amply shown, quite fruitless. This concept of a "hypothalamic amenorrhoea", requiring some definite precipitating event to set it in motion, is in accord with the clinical data. In 14 cases with early amenorrhoea, there was a physical illness or clear-cut psychic trauma in twelve; in 16 cases with late amenorrhoea, such events could be found in six only. Thus early amenorrhoea may be related to an acute physical or emotional disturbance at the onset of the illness, and to have no other specific significance.

Some American writers (Waller, Kaufman and Deutsch, 1940), have suggested that the amenorrhoea and anorexia of these patients is related to phantasies of oral insemination and pregnancy. Here again is an attempt to find a single explanation for amenorrhoea and anorexia, which is difficult to accept without reservation. Our findings confirm that the patients are sexually maladjusted, but this is in accordance with their neurotic constitution. Four female patients received intensive psychotherapy, and phantasies linking eating and becoming fat with genital functions were brought to light. Such phantasies are probably common among adolescent girls, and amenorrhoea arising from any cause would seem especially likely to evoke them. The predominance of the disorder among women provides some circumstantial evidence in favour of this hypothesis, but at the best, this psychopathological explanation remains very insubstantial.

3A

The effects of chronic anorexia on the endocrine system have been reviewed by Decourt and Michard (1950). Longstanding malnutrition may result in degenerative changes in the pituitary, but in anorexia nervosa three distinct mechanisms may be necessary to account for the amenorrhoea.

    (1) A direct nervous action on the uterus, to explain the sudden cessation of the menstrual flow which may occur as the result of psychic trauma.

    (2) A hypothalamic-pituitary mechanism of the kind described by Reifenstein (1946).

    (3) The effect of chronic malnutrition on the endocrines.

If this last mechanism occurs, it is certainly rare. Menstruation may be resumed spontaneously even after many years' amenorrhoea, provided that normal weight is regained. Only one patient in our series has failed to menstruate for 19 years, although in other respects her recovery has been quite good. In this case, amenorrhoea occurred early in the illness, and the period of under-nutrition was brief, so that the persistence of the amenorrhoea cannot reasonably be attributed to the effects of starvation (Case 17). Another patient was seen at the age of 50, 39 years after the first feeding difficulties at the age of 11, and 16 years after admission to hospital. The menses had always been very irregular. She weighed 6 stone and still ate very little. She was active and alert (unlike cases of pan-hypopituitarism) and showed intense aversion for even the discussion of food (Case 7). Her eating habits seemed still to be psychologically determined even after the lapse of many years. In two patients pregnancies occurred after amenorrhoea of six and eight years' duration (Cases 15, 20); in another, normal pregnancy and lactation took place despite incomplete recovery and subsequent fluctuations in weight (Case 3).

We may conclude, therefore, that from our clinical survey there is no evidence for any permanent damage to the endocrine organs; on the contrary, normal function may be resumed despite prolonged malnutrition.

(2) HEREDITY

Cobb (1943), placed anorexia nervosa "just below the psychoses" in severity of disturbance. Nicolle (1938), considered it to be a "pre-psychotic condition". Scott (1948), allied it with manic-depressive illness. It seems relevant, therefore, to examine the family histories of our patients for psychosis. Owing to the relatively small numbers, and the incompleteness of the family trees, affective disorder among the parents will alone be considered. If anorexia nervosa is genetically linked to affective disorder, it might be predicted that four or five parents with manic-depressive psychosis would be found among the families of our 38 patients (Stenstedt, 1952). In fact, only one parent (Case 14) suffered from a recurrent affective psychosis. No definite manic-depressives were found by Nemiah (1950), among the parents of his 14 cases. These findings do not support the hypothesis that anorexia nervosa, regarded as an entity, is genetically akin to manic-depressive illness. In the single case, however, heredity probably was important; two maternal relatives as well as the mother, were psychotic, and the patient's illness began with a suicidal attempt, followed by apathy and inertia occurring intermittently over several years.

In only 5 cases (Cases 6, 8, 13, 31, 38) were any siblings reported to be psychologically disturbed, and none were psychotic. However, of the 76 parents, 26 were psychiatrically disturbed, but not psychotic. Further discussion will be devoted to these figures in a later section.

(3) CHILDHOOD ENVIRONMENTS

In this and the next section, reference will be made to previous studies of groups of neurotic patients. Slater (1943), published a statistical study of 2,000 neurotic soldiers, whose average age was 28·3 years; the diagnoses in four-fifths of his material were: Anxiety Neurosis, Hysteria, Psychopathic Personality, or Reactive Depression. Mayer-Gross *et al.* (1949), reported the findings in a group of 201 neurotic officers, whose average age was 31·9 years, and whose intelligence probably approximated more closely to that found in our patients; there was also a control group of 55 officers. Linford Rees (1949), examined 2,000 neurotic W.A.S. personnel, whose sex, age and school records approach those of our group. Finally, a group of 63 patients suffering from anxiety states was investigated in the U.S.A. by Miles, Barrabee and Finesinger (1951), who provide evidence on features of prognostic importance. Our object has been to ascertain to what extent our patients conformed with the description given by these authors of the "neurotic constitution", viz. family history of neurosis, childhood neurotic traits, previous psychiatric illness, and abnormal personality structure. Controls studied by Mayer-Gross *et al.* (1949) and by Slater and Woodside (1951), showed significantly fewer of these neurotic pointers. The neurotic groups, taken together, are compared with our own in these, and in certain other respects referred to in the text (Tables I-IV). Where the figures for any one item differ significantly (χ^2 method), they are printed in heavy type. For obvious reasons, great caution must be used in interpreting the results.

(a) *Social and Economic Status of the Families*

The occupations of the fathers show that the patients were drawn from all social classes. Only one patient was brought up in an environment where "promiscuity, social chaos and economic insecurity" reigned (Case 31). The early death of the fathers raised economic problems for several families; 7 others were financially insecure for other reasons (Cases 6, 7, 16, 26, 29, 31, 38). One patient actually attributed her early feeding difficulties to economic causes (Case 7); "Father was wasteful and the family poor, so I stopped eating". This patient also had a strong sense of rejection by her parents. On the other hand, 11 families were economically secure, and enjoyed an average or good social position. These families were often described as "united". Four more families remained integrated despite overt or implied causes of family stress or strained relationships (Cases 5, 13, 32, 36).

(b) *Broken Homes; Parental Deprivation; Illegitimacy*

Eight patients, i.e. 22 per cent. (Cases 3, 6, 10, 14, 23, 24, 26, 37) had suffered the death or loss of a parent before the age of 14 years; two had lost their mothers, and six their fathers. Case 25 was cared for in her first year of life by an aunt during her mother's illness. Four patients (Cases 1, 7, 25, 38) lost a parent during adolescence. Three patients were illegitimate, and 2 were brought up in an orphanage. These numbers do not differ significantly from those found in other neurotic groups, and among non-psychiatric patients (Slater and Woodside, 1952; Barry, 1939). There were 9 instances of "broken homes" (24 per cent.) i.e. where for one reason or another the patient had had no settled or continuous home life during childhood (Cases 3, 6, 7, 10, 14, 23, 26, 31, 38). According to Bowlby (1951), the incidence of "broken homes" in the general population, before the age of 16, may be from 11-15 per cent. The difference from our findings is not statistically significant. The results both of Nemiah

(1950), and ourselves, show that in about one-quarter of the families the father was lacking, either through death or voluntary absence, before the patient reached 16 years of age.

(c) *Parental Age, Health, Personality*

The mean age of the mother at the patients' births was 29·5 years, ranging from 19 (Case 13) to 45 years (Case 22): five mothers were below the age of 25, and only one over 35. Thus, youthfulness or advanced age among the mothers, such as might perhaps have contributed to early feeding difficulties, appears unimportant. The ages of the fathers did not deviate from the normal range. There was considerable physical ill-health and mortality. Twelve patients (32 per cent.) had already lost a parent through illness, when they themselves fell ill. Six mothers and four fathers suffered from some chronic disease, which in six cases was psychosomatic in nature, i.e. chronic gastric ulcer (2), rheumatism (2), colonic disorder, migraine, and asthma (2). Thus approximately two-thirds of the patients had experienced some fatal or chronic illness in the family.

It is likely that this parental ill-health evoked hypochondriacal attitudes (e.g. in cases of asthma or pulmonary tuberculosis), and preoccupations with diet (e.g. in colitis, or gastric ulcer) within the family circle. In addition, however, eight parents were either hypochondriacal, or poor eaters, or very concerned with diet despite the absence of physical disease. Thus some twenty of the patients were probably subjected to an emotional atmosphere of invalidism or hypochondriasis for varying durations, and at some period of their childhood and adolescence. Among the 76 parents, there were in all, 26 who were psychologically disturbed (but not psychotic) i.e. 34 per cent. This may be compared with the figure of 26·5 per cent. found by Miles, Barrabee and Finesinger (1951), among the parents of their patients suffering from anxiety states (Table II).

TABLE II

Percentages of parents with psychological disturbance: in this study, and in that of Miles et al. (1951) on 62 patients with anxiety states.

	Psychosis	"Neurosis"	"Marked instability"	Totals
79 parents (Miles *et al.*)	10	5	22	37
76 parents (this group)	3	30	4	37

The incidence of psychological disturbance is identical. The differences in the diagnostic sub-groups may be partly due to differences in the criteria used. Our definition of "neurosis" and "instability" is based on the descriptions given in the case histories. Most of the "neurotic" parents seem to have suffered from anxiety states, with or without somatic dysfunction. Only three (Cases 1, 26, 35) could be called "markedly unstable". Miles *et al.* do not give the criteria on which they distinguish "neurosis" from "marked instability", so that closer comparison is not possible. But Nemiah's (1950) paper also suggests that in the U.S.A. "instability" may be the commoner diagnosis.

Another way of stating the incidence of familial ill-health is to give the percentage of patients having disturbed relatives. In this series 66 per cent. had psychotic or neurotic parents, or neurotic siblings. In Table III, are given some equivalent findings from other reports. The figures indicate that the families of these patients are as much loaded with mental ill-health as the families of other groups of neurotic patients.

TABLE III

Incidence of various features associated with the "neurotic constitution" in this and in 3 mixed neurotic groups. Figures given in percentages. Heavy type shows that the differences between two groups are significant at the 1% level using X^2 method.

	HISTORICAL DATA									
	Family History of "neurosis" or psychosis	Neurotic Traits in Childhood	Much physical illhealth in Childhood	School Record		Intelligence		Work record poor	Previous psychiatric illness	"Unstable personality"
				Poor	Good	Poor	High			
2,000 neurotic soldiers (Slater, 1943)..	56	59	34	31	14	31	10	33	23	45
2,000 neurotic servicewomen (Linford Rees, 1949)	58	46	—	7	32	17	33	20	23	57
201 neurotic officers (Mayer-Gross *et al.*, 1949)	41	45	27	—	—	8	—	23	37	73
ALL neurotic groups	56	52	33	19	**23**	23	**21**	26	**23**	**52**
38 patients, anorexia nervosa (This study)..	66	66	32	11	**42**	19*	**54***	27†	**50**	76

The personalities of the parents have attracted much attention. Cobb (1943) described the typical home situation as a "robust nagging mother and a passive father". The personalities of the parents of our patients were by no means homogeneous. The mothers were, more often than robust, fussy, nervous and over-anxious; only in five cases (Cases 22, 25, 27, 30, 34), does Cobb's description apply. The personalities of the fathers also varied. Six were described as kind, sensible, fair, calm and easy-going, cheerful, sweet-natured, thoughtful and intelligent. Four were irritable, quick-tempered, moody, emotionally cool or reserved. The dominance/passivity relationship between the parents cannot in every case be assessed from the data available. In Cobb's series of 14 cases, described in detail by Nemiah (1950), four families were apparently dominated by the mother, and in four others the father spent little time at home; in only one family was the father probably the dominant parent. In our series, the mother seems to have been the dominant figure in eight families, and the father in six. In nine other families, the mother was the sole parent, owing to the father's death when the patient was 14 or younger: all these mothers, except one (Case 7), were irritable or anxious. Taking our material together with Nemiah's there are 13 families (26 per cent.) where the father played little part, either because of his death, or voluntary absence from home.

The unsatisfactory state of personality study and of our knowledge of interpersonal relationships are well known. The attempt to establish specific traits in relation to particular disorders is by no means established. Many of our patients

* data in 17 cases only.   † data in 33 cases who had begun work.

grew up in an unsatisfactory atmosphere of fussiness and anxiety, but this is also described in the parents of other groups studied in psychiatric clinics, e.g. asthmatics (Rogerson *et al.*, 1935). It cannot be considered to have any special significance for the development of anorexia nervosa.

(d) *Size and Composition of the Families*

There were 6 only children, seven families of 2, nine of 3 children; the largest contained 9, 10, and 12 children. Cobb (1950), found a surplus of sisters; in our group there were 102 siblings, 45 brothers and 38 sisters, and 19 whose sex was not recorded. Even if all the latter were sisters, χ^2 method shows that the sex distribution did not differ significantly from an expectation of 51 siblings of each sex. This is still true if the males, and the females over 30 years are excluded. Cobb (1950), also suggested that the patient's place in the family may be important. More patients than would be expected on a chance distribution occupied the second position, but his results are not significant statistically. In the present material, fewer patients than would be expected by chance were second children, and this is true when the males, and the females over the age of 30, are excluded. In neither case are the figures significant.

(e) *Family Inter-relationships*

The family inter-relationships and the attitudes found amongst patients with anorexia nervosa have been described by Nemiah (1950). Maternal over-solicitude, with excessive dependence on the part of the patient, was the typical finding. In this series, eight patients possessed over-solicitous mothers, and four more were "very attached" to their mothers (31 per cent.). On the other hand, the mother of five patients were strict disciplinarians, and in four other families there was overt hostility between mother and daughter. Thus a different relationship was present in 24 per cent. The relationship between patients and fathers also varied. Six fathers were lenient or kind and won their daughters' affections. Seven were cool or actively antagonistic. In some families both parents showed similar attitudes (e.g. Cases 17, 20, 21). In others opposite attitudes were expressed (e.g. Cases 9, 28). In all, 26 patients experienced an unhealthy emotional relationship with one or both parents (68 per cent.). In twelve, the relationship was seriously abnormal, i.e. there was outright intolerance or excessive dependence. Only four patients had a relationship with both parents which was specifically stated to be satisfactory (Cases 2, 4, 16, 28).

To summarize these findings concerning the family background of the patients, it can be seen that:

(1) Psychosis in the family is rare.
(2) Gross disturbance in social or economic circumstances occurs only in a small minority.
(3) Loss or absence of the father before adolescence may be a significant feature in the histories of patients with anorexia nervosa.
(4) Invalidism, hypochondriasis or pre-occupations with diet are found in about half the families.
(5) Parental neurosis is as common as among the parents of other neurotic groups.
(6) Stable personalities among parents and healthy parent-patient relationships are the exception.
(7) The size and composition of the families, and the position of the patient in the family, cannot be shown to differ from the chance expectation.

(4) THE PERSONAL HISTORIES

(a) *Early Development*

In general, the patients developed normally; only one (Case 31) had always been retarded. Full information is lacking on such interesting questions as the infantile feeding methods, early difficulties of management, weight variations, etc. But seven cases are known to have had gastro-intestinal disturbances, or feeding problems at or before the age of three years (Cases 7, 11, 15, 16, 22, 25, 38). One of these remained underweight during the first year of life (Case 25), another developed severe constipation, diagnosed as "megacolon" at the age of three (Case 38). In Case 7, reluctance to eat normal quantities began at three years and has lasted throughout life, with exacerbations.

(b) *Neurotic Traits during Childhood (4-12) years)*

All the seven patients described above continued to show digestive disturbances during later childhood, e.g. constipation, bilious attacks, faddiness, Case 15 was sick at breakfast from the age of 7 to 12; she disliked eating because of a "high colour after meals". Case 7, at the age of 10, starved herself for 7 days to "save money"; for days on end she is said to have lived entirely on sweets (her sister owned a sweet shop). In 13 other patients gastro-intestinal symptoms, feeding problems or weight deviation was recorded. Three were plump children (Case 2 weighed 12 stone at 14 years). Case 21 was always thin and disliked fats. Case 26 had "never taken breakfast". Cases 6, 12, 17, had frequent bilious attacks. The remainder were pernickety feeders. Thus, even during childhood, about half the patients showed weight deviation, or a major or minor difficulty connected with eating or digestion, beginning in 7 patients before the age of 4. In fact, 6 patients (Cases 7, 11, 15, 25, 36 and 38) fell ill in adult life in a setting of abnormal eating habits established during childhood.

Thirteen of these 20 patients showed clear-cut neurotic behaviour in other fields, and 11 others also exhibited neurotic traits. In three of the remainder, data were lacking. Thus only 5 of the 38 patients developed normally emotionally and as to their eating habits, whereas 24 out of the 35 in whom information was adequate showed neurotic disturbances. The figures show that 14 of these 24 (58 per cent.) had feeding problems; these are, of course, common during childhood, and we think it likely that about the same incidence would be found in an unselected group.

ᐟ Table III shows the incidence of childhood neurosis in this series, contrasted with that amongst the neurotic groups described by Slater (1943), Linford Rees (1949), and Mayer-Gross *et al.* (1949). Patients with constipation, bilious attacks or weight deviation only are excluded from our figures. At least as high a proportion of psychological disorder during childhood occurred among our patients as among other neurotic groups. More serious divergences, from normality affecting the whole personality of the child, were found in 40 per cent. (15 cases); the difference from the figure of 26 per cent. given by Slater (1943) is not statistically significant.

The number of neurotic traits per patient was 2·0. This may be related to the relatively poor prognosis, for Miles, Barrabee and Finesinger (1951) found that the number was highest (2·2 per patient) in a group of patients with the worst outcome, compared with an incidence of 1·3 among patients who recovered.

(c) *Physical Health during Childhood*

Slater and Woodside (1951), noted that physical ill-health in childhood, defined as "much minor illness", was associated with neurosis in adult life.

Table III shows our findings. Twelve patients (Cases 2, 5, 7, 9, 10, 12, 13, 15, 22, 23, 27, 35) were thought to have had more physical ill-health than might have been expected in the average child, but it was not always easy to distinguish genuine physical illness from neurotic disorders. Thus Case 9 had a "funny illness" aged 7, which interrupted schooling; Case 13 was "anaemic" and suffered from atypical chorea when aged 9. Cases 10 and 7 were "delicate". Two patients (Cases 5 and 23) suffered from asthma. Only two patients (Cases 12 and 22) had serious prolonged illnesses, in both cases the result of rheumatic carditis.

(d) School and Work Records

These are of interest, firstly because they give further information about the alleged ambitiousness and conscientiousness of anorexic patients (Dubois, 1949), and secondly, because poor records in these spheres have been correlated with neurotic personality (Slater, 1943).

At school 8 patients (21 per cent.) were conscientious or ambitious, whereas four had poor records (Cases 10, 26, 31, 37); 12 (34 per cent.) disliked school, and were solitary and unhappy there. Fifteen patients were academically successful (i.e. won scholarships or achieved higher education). Owing to their youth and sex, the work record of the patients is not easy to assess; four patients, for example, had not begun work. Of the remainder, nine showed evidence of maladjustment (26·5 per cent.). Twenty-three patients had quite satisfactory records, and of these, six were noted to be specially conscientious at work (18 per cent.).

Table III shows the school and work records of our patients and their intelligence as estimated during admission to hospital (the data on intelligence were available in 17 cases only). One quarter of the patients had a poor work record despite good intellectual ability as shown by school performance and by formal testing. To some patients work seemed necessary to achieve even a precarious adjustment. Case 7, for instance, said "If I did not work, I would be ill", and "If I am not working, what is the use of my eating?" This type of abnormal conscientiousness has been particularly noted in some cases of anorexia nervosa (Dubois, 1949).

The good intelligence of most patients with anorexia nervosa has also been observed elsewhere (Dubois, 1949) although the results of actual mental testing have not been recorded. The fact that one of our patients (Case 31) was a high-grade defective is therefore of special interest. Her expressed intention, like that of some more intelligent patients, was "not to become fat". But she never refused food. Instead she always vomited after eating.

(e) Previous Neurotic Illness

The high proportion of patients with childhood neurotic traits has already been noted. It is not surprising then that as many as 19 patients (50 per cent.), showed psychiatric symptoms after the age of 12, but before the onset of anorexia nervosa (Cases 6, 7, 8, 10, 11, 13, 14, 15, 17, 23, 25, 26, 27, 32, 33, 34, 35, 36, 38). Six patients suffered from "depression"; five from "tiredness" or "anaemia and debility"; four had vomiting attacks; three had a severe bowel neurosis; three frequency of micturition; three fainting fits, or overt hysterical attacks; two experienced a compulsion to check and two others had episodic obsessional illnesses with rituals; one patient, a boy, had a phobia of dirt; another had delinquent tendencies; one patient was alcoholic. In all these patients, the neurotic illness had interfered considerably with their lives, leading to interruption of school or work, attendance on doctors, or hospital treatment

as out-patients. Six patients gave a history of "psychosomatic disorder" (asthma (2), vasomotor rhinorrhoea, colitis, functional megacolon and migraine). Previous attacks of anorexia nervosa, leading to in-patient hospital treatment, had occurred in eight cases (Nos. 2, 5, 10, 13, 17, 27, 29, 33), and varying degrees of recovery had taken place before admission to the Maudsley Hospital. Five of these patients had also shown some of the other neurotic symptoms described above.

(f) Pre-morbid Personality Traits

Some authors (Palmer and Jones, 1939; Rahman, Richardson and Ripley, 1939; Dubois, 1949), have described certain personality traits as characteristic of anorexia nervosa, and have spoken of a type similar to the "anal-erotic character of the Freudians". Obsessional traits are said to be outstanding. The patients are also said to be ambitious and intelligent, but insecure, seclusive, shy, dependent and immature. The findings in this material are shown in Table IV, and are compared with the traits found among neurotic patients in other reports.

TABLE IV

Incidence of various personality traits in this and in 3 mixed neurotic groups. Figures given in percentages. Heavy type shows that differences between the two groups are significant at the 1% level using χ^2 method.

PERSONALITY TRAITS

	Obsessional	Hypochondriacal	Anxiety-proneness	Hysterical	Dependence, timidity	Inertia, laziness	Food faddiness	"Stability"
2,000 neurotic soldiers (Slater, 1943)	20	7	24	14	33	24	—	55
2,000 neurotic servicewomen (Linford Rees, 1949)	29	23	68	32	36	20	—	43
201 neurotic officers (Mayer-Gross et al., 1949)	37	—	59	—	53	—	—	—
ALL neurotic groups	**25**	**15**	**46**	23	35	22	—	**49**
38 patients, anorexia nervosa (This study)	**50**	**34**	**24**	24	48	13	32	**24**

In our material, obsessional traits were found in 50 per cent. This figure is not significantly different statistically from the 37 per cent. found by Mayer-Gross et al., among neurotic officers. However, interference with efficiency or enjoyment of life was an important criterion used by these workers. Only 10 of our patients (26 per cent.) would fall into this category. It was, however, difficult to judge to what extent the obsessional traits described in the case records actually handicapped the patient in her daily life. The figure of 50 per cent. is significantly higher than that found by Linford Rees (1949) and by Slater (1943),

3 B

among their total material. This fact may possibly be related to the higher average intelligence of our patients.

Obsessional personality traits are undoubtedly often present in patients with anorexia nervosa, but they are certainly not an essential part of the syndrome. Some of our patients showed no obsessional traits, e.g. Case 3, who described herself as "the reverse" of obsessional. Probably the obsessional habits indicate only in a general way a severely neurotic personality, and are not specifically significant for the development of anorexia nervosa. Linford Rees (1953), for example, found obsessional traits among 40 per cent. of his female asthmatics in a similar age group.

It may be seen from Table IV, that there is a higher incidence of hypo-chondriacal traits, including food and bowel pre-occupations, and a lower rate of anxiety proneness in our group than in the other reports. Forty-five per cent. were "outgoing or sociable", and approximately the same proportion were "shy and reserved". Only 24 per cent. could be regarded as "stable", assuming rather wide limits of normality. Thus the group as a whole show poorly integrated personalities, manifesting the traits usually associated with emotional instability.

(g) *Physique, Menstruation and Endocrine Status*

The usual weights of patients who develop anorexia nervosa are of interest, because they may indicate earlier attitudes towards eating. Ten (26 per cent.) of our patients are known to have been overweight during infancy (1), childhood (2), or adolescence (10), and two had been overweight as adults. Five patients were "thin" at some period before maturity. These figures may be under-estimations because systematic data were not available. Variations in weight are, of course, common, particularly during adolescence, and it is not known if a higher proportion of our patients showed weight deviations than might be found in a random sample of the general population. These variations in weight could also indicate endocrine or hypothalamic disturbance. One patient (Case 22), after a head-injury which resulted in two days' loss of consciousness, steadily gained weight to $12\frac{1}{2}$ stone over a six-year period. This is the only case in which possible physical trauma to the midbrain or hypothalamus could have been related to the change in weight. At a later date she lost 42 lb. rapidly when her husband went abroad. She showed no other evidence of hypothalamic disorder.

Sheldon (1937) considered that the heights of some of his own and of reported cases indicated pituitary deficiency. The average height of 17 of these patients (excluding the four males) was 5 ft. 3 in. (highest 5 ft. $7\frac{1}{2}$ in., lowest 4 ft. $9\frac{1}{2}$ in.). Only two patients were under 5 ft. and three over 5 ft. 6 in. An adult male was 5 ft. 8 in., but a boy aged 13 was only 4 ft. $4\frac{1}{2}$ in. These findings do not suggest endocrine disorders, such as hypogonadism or pan-hypopituitarism, except in the case of the boy. He had a four years' history of repugnance for food, associated with a severe phobic state, so that there were prominent psychological abnormalities resulting in under-nutrition which could account for his failure to develop. Cases of this kind have been described by Decourt (1947), Hubble (1952) and by Talbot *et al.* (1947).

Constitutional hypogonadism as a background for the disorder has been suggested by Aub (1945), Nicolle (1939), and Rahman *et al.* (1939). The pre-morbid menstrual functions of our patients do not support this theory. As reported elsewhere (Kay, 1953), the menarche occurred during the normal age-period (11-15) except in four patients in whom it was retarded by 1-4 years. Common minor irregularities such as dysmenorrhoea, rather scanty loss, and/or

irregularity, were reported at some stage in 16 patients; menorrhagia was noted in three patients. On the other hand, menstruation was eventually established, with regular periodicity and normal loss, in all but 10 out of the 28 women in whom information was available. The illness in fact usually interrupted normal menstrual function, a fact noted by other observers (Decourt and Michard, 1950). The hair growth and secondary sex characters were usually normal, except for the downy hair on the limbs which also occurs during famine. Three patients showed a masculine distribution of hair. The breasts were under-developed in four, whereas in seven they were specially observed not to share in the general wasting, a well-recognized occurrence (Farquharson and Hyland, 1938). Of the four males, a man of 45 (Case 18) had suffered traumatic castration of both testicles twenty years previously. His present illness—loss of weight and appetite, with hypochondriasis centred on peculiar abdominal sensations—had lasted 2½ years. He committed suicide after leaving hospital. Despite the castration, it seems probable that this illness which occurred so long afterwards, was psychologically determined. Hemphill (1944) however, published a remarkable case of a man with obsessional neurosis, anorexia, loss of weight, and hypo-gonadism, who was cured by leucotomy.

It appears that constitutional or acquired endocrine abnormalities are inessential to the disorder, and that in the great majority of cases, it is un-necessary to assume that they exist. The problems of the amenorrhoea, and of possible endocrine changes secondary to prolonged undernutrition, are discussed later.

(h) Sexual Adjustment

Of the four women (Cases 6, 9, 12, 17) who were married at the time of admission, three were known to be sexually frigid. Two had fallen ill shortly after marriage. Only one of the married patients, and one other, a widow (Case 14), had children. The male patient already described (Case 18) who had suffered traumatic castration 17 years before the onset of his illness, had sub-sequently married. Sexual intercourse was said still to occur, but infrequently. Of the 25 unmarried adults (i.e. aged 18 or more) fourteen showed evidence of psycho-sexual maladjustment, most often indifference to or dislike of male attention. Two adolescents also had serious sexual difficulties (Cases 16, 34). Several patients said they wanted to remain slim, boyish or athletic, and some of these were particularly concerned by mammary development.

SUMMARY

The personal histories of the patients show that:

(1) In respect to childhood neurotic traits and physical ill-health, they conform with mixed neurotic groups previously described. Two-thirds showed neurotic disturbance, and about half had some feeding or digestive difficulty in childhood. Minor physical ill-health occurred in one-third.

(2) The incidence of previous neurotic illness, and poor personality development is higher than described in the mixed groups. Obsessional and hypochondriacal traits are more, and anxiety-proneness less common.

(3) More patients are of above average intelligence than among the other groups. Despite this, one-third were unhappy at school. The work-record was satisfactory in the majority, but less than a third were exceptionally conscientious at school or work.

(4) Sexual maladjustment is the rule.

(5) The physique (heights and weights), menstrual histories, and endocrine states, did not vary outside normal limits.

(5) MALE CASES

Recently American psychiatrists have tended to exclude males altogether from their reports (Nemiah, 1950), presumably owing to current psycho-

pathological theories. Cobb (1950), by making amenorrhoea one of the criteria for diagnosis, has also excluded males. When the cases are unselected however, males form from 10-30 per cent. of cases, Ryle, 1936; Farquharson and Hyland, 1938; Berkman, 1939. Detailed reports, especially of the psychiatric features, have seldom been given, but there are descriptions by Venables (1930), Langdon-Brown (1934), and Morlock (1939). Included in the present series are three men and one boy, whose histories are given in the appendix.

There is no doubt, from a study of these cases, that severe under-nutrition due to repugnance for food, or morbid ideas about the effects of eating, but without psychosis, can occur in males. As in the female cases, the condition may remit either spontaneously, or with supervised dietary, or psychological treatment. Endocrinotherapy is unnecessary. The published reports show some differences in the clinical picture of these male patients. Fear of becoming fat is not expressed, and hysterical "belle indifference" and apparent self-satisfaction is uncommon. On the other hand, hypochondriacal anxieties or pre-occupations are more often found, e.g. that "too much" food, or certain foods, cause weakness, seminal emissions, or stoppage of the bowels.

Few follow-up studies have been reported on males with anorexia nervosa. Cobb (1950), states that males with this syndrome "nearly always become schizophrenic". The patients reported by Venables (1930), Farquharson and Hyland (1938), McCullagh and Tupper (1940), and Sexton (1950), 6 cases in all, were not psychotic after periods varying from 7 months to 8 years.

The follow-up of the males in this material is, unfortunately, incomplete. Case 10 is untraced. Case 11 is known to be alive and able to work at the age of 28; his father states that he is "clever in some ways, but lacks every-day judgment"; no details are available. Case 36 developed pulmonary tuberculosis; he gained weight in a sanatorium, but two years after the original admission he was still dependent and inadequate, with a morbid interest in his diet.

Attempts to explain the higher incidence in women include the following theories:

(1) In general, the bodily contours have a greater significance for maturity, especially sexual maturity; by keeping thin, female patients deny adult sexuality and responsibilities.

(2) More specifically by hysterical and phobic mechanisms, they may make use of the common equation of pregnancy with growing fat; presumably, the unconscious fear of pregnancy which results in refusal to eat does not occur among men.

When the disorder is an expression of bowel hypochondriasis, an obsessive-compulsive state, or a predominantly depressive illness, it occurs in both sexes. Neurotic pre-disposition or abnormal personality structure are nearly always found.

(6) TREATMENT AND OUTCOME

The immediate results of hospital treatment and the long-term outcome have been described elsewhere (Kay, 1953). The time-honoured treatment, by persuasion and meticulous supervision of the patient's diet, practised so successfully by earlier physicians (Ross, 1936; Hurst, 1936), has in recent reports been found less satisfactory. Deeper psychotherapy, extending to "total personality adjustment", and follow-up support, over several years, is now advised in order to lessen the chances of relapse and to assist the patient with her neurotic problems (Dubois, 1949). The results of hospital therapy in our cases confirm the

difficulties of treatment. Only about half the patients gained 14 lb. or more in weight during an average stay of 3 months. In addition to the orthodox methods, deep psychotherapy ("insight" therapy; analysis) was attempted in nine, and modern physical methods (E.C.T.; leucotomy) were employed in five patients. The results were not uniformly successful. Three patients broke off psychotherapy, and must be considered failures of this mode of treatment; one patient died, and only one recovered during therapy. The psychotherapist has often to contend with a patient who does not admit that she is ill, or is negativistic and hostile. We are inclined to believe that psychotherapy is not the treatment of choice, unless (1) there is no urgency; (2) a good relationship can be quickly established; (3) the patient is able to formulate a complaint which can be used as a basis for therapy.

In patients who are cachectic and resist supervised feeding, physical methods should be considered. Several authors (Hemphill, 1944; Sargant, 1951) have reported good results with leucotomy. The indications appear to be: cachexia, associated with severe tension, phobic, or obsessional states, which has not responded to other methods. In our material, Case 27 was treated by leucotomy in another hospital, after 15 months' unavailing analysis she was relieved of a severe compulsion neurosis and, 18 months after the operation, weighed 10 stone 10 lb. In these young patients however, leucotomy cannot be undertaken without most careful consideration. Sifneos (1952), and Carmody and Vibber (1952), reported striking improvements in two patients after modified (lower quadrant) leucotomies; probably restricted operations should always be done in the first instance. There may also be a place for the wider use of E.C.T. Its action on psychological disorders may be unspecific (Roth, 1952). A patient under the care of one of us gained 14 lb. with this treatment, after two months' intensive psychotherapy had failed to produce the slightest improvement. In very longstanding cases, who maintain their weights above a cachectic level, determined attempts at re-alimentation are best avoided. Supervised feeding, particularly tube-feeding, may cause vomiting and strong emotional reactions with much resentment. Therapy, if it can be undertaken at all, should be supportive, and restricted to current problems.

Finally, endocrine therapy has no place in the treatment of the acute phase, either for the anorexia or the amenorrhoea. Thyroid is contra-indicated if the patient is not eating, and unnecessary if she is. Pituitary and ovarian hormones seldom cause menstrual bleeding; if they do, the patient may react with an exacerbation of symptoms, vomiting and abdominal pains (Cases 19, 25). Moulton (1942), studied the vaginal smears of a patient with cyclical vomiting. She found that the vomiting was associated with increased vaginal cornification, which indicated oestrogenic activity. If the patient reacts to her own oestrogens by vomiting, there is nothing to be gained by prescribing them. Only if normal weight has been regained, and the patient is psychologically ready for menstruation, may endocrine preparations be given with benefit; perhaps an endocrine "boost" is necessary after prolonged amenorrhoea to induce a second "menarche" in the life of the patient.

OUTCOME

The frequency of relapse and of partial recoveries is well known. Our follow-up study (Kay, 1953) confirms that menstrual irregularities (45 per cent.) and disturbance of appetite (65 per cent.) with low or fluctuating weight (50 per cent.) were often to be found after periods varying from 2 to 19 years. This tendency of acquired patterns of behaviour to persist may be fundamental for

the understanding of mental ill-health. It occurs in other psychiatric syndromes; for instance, Wheeler *et al.* (1950), traced 173 patients who had been diagnosed as suffering from "Effort syndrome" 20 years earlier. No fewer than 52 per cent. still had some disability from mental or somatic symptoms attributable to anxiety. Patterns of reaction, psychological and psychosomatic, once established, are not readily disturbed.

In addition, our patients showed a variety of neurotic symptomatology. Sexual adjustment in particular was seldom achieved. Seven patients married, and of these 5 had children (Cases 2, 3, 5, 15, 20); but sexual frigidity was reported in all five who gave information on this topic. This accords with the finding of Miles *et al.* (1951), that sexual adjustment among neurotic patients is unlikely to improve. Many patients were found to be suffering from depressive spells, headaches, panic attacks, hypochondriasis, or difficulties at work and in inter-personal relations. The original case-records showed that these symptoms had usually formed part of the clinical picture on admission to hospital, but were overshadowed by the feeding problem.

Only Case 24 developed new, schizophrenic symptoms, i.e. episodic auditory hallucinations and passivity feelings. During her treatment for anorexia nervosa she had, however, already shown a psychotic reaction, consisting of florid paranoid delusions in a setting of severe depression. It is of interest that her psychosis was atypical, responding promptly to E.C.T., and that now, 9. years after the beginning of her illness, she is married and living at home. Cobb (1950), also found that psychotic episodes occurred, but were not typically schizo-phrenic.

SUMMARY AND CONCLUSIONS

1. The family histories, childhood environment, and previous mental health of 38 patients with the syndrome known as "anorexia nervosa" have been examined. They show that parental neurosis, disturbed parent-child relationships, childhood neurotic traits, and previous neurotic illness, are common. These are all features of the "neurotic constitution".

2. More specific findings are: parental invalidism, hypochondriasis and dietary pre-occupations; and, among the patients, earlier feeding difficulties.

3. The personalities of the group are poorly-integrated and show a variety of neurotic traits. Obsessional traits occur in half, but their exact significance for anorexia nervosa is uncertain.

4. Intelligence is nearly always at least average.

5. There is no evidence for constitutional or acquired endocrine disorder in the pre-morbid clinical picture. The illness itself is explicable without assuming endocrine changes, except for (*i*) compensatory adjustment to undernutrition, (*ii*) a specific mechanism causing the amenorrhoea, when this occurs early. This mechanism probably also causes the amenor-rhoea which may accompany other psychic disturbances not specially associated with anorexia or loss of weight. Endocrine therapy seldom, if ever, materially affects the course of illness.

6. The psychiatric symptomatology is diverse. There is no neurosis specific to anorexia nervosa, and no specific anorexia nervosa. We are not convinced that we have been dealing with a psychiatric entity.

7. The prognostic survey shows that the definitive symptoms persist in about half the cases, and that residual neurotic symptoms are the rule. Fifteen per cent. die from the illness or its complications.

8. Treatment is unsatisfactory. A plea is made for a broader and more flexible approach to this problem.

APPENDIX

FOUR MALE CASES

CASE 10

Single male, aet. 25, admission 10.ii.37. Six months' tiredness, insomnia, anorexia.
Attitude to illness: Brooding, anxious, better with fiancee.
Other symptoms: Morning depression, irritability, avoidance of company, needle-like chest pains.
Family history: Illegitimate. M. alcoholic; one brother healthy.
Personal history: Orphanage till 4. Neurotic child. Backward scholar.
Interests: Astrology and fortune-telling.

Occupation: Butler (three posts).

Sex: Engaged 12 months. Keen on girls.

Personality: Secretive, pessimistic, over-conscientious. Afraid of being alone, cries when upset.

Health: Three previous similar attacks, aet. 15, 18 and 20. Active P.T. diagnosed once.

On admission: Weight: 8 st. 3 lb., estimated loss 2 st. Marked wasting; general weakness; cold extremities; dyspnoea on exertion; normal secondary sex characters.

Mentally: Cause of illness "too little fresh air, not eating, self-neglect". Mood mildly depressed. No delusions, hallucinations or obsessions. Shy about sex.

Spec. invest.: X-ray chest, "healing and partly calcified focus R apex". Other tests including E.S.R. and Sputum, neg.

Treatment: Bed rest, high calorie, mod. insulin, inj. Ant. Pituitrin.

Course: Moody, querulous, but at times cheerful. *Behaviour:* Defiant, interfering. Took fluid diet under protest. Discharged to convalescence "Mentally improved, physically unchanged". (Weight: 8 st.)

Diagnosis: "Anorexia nervosa, with severe neurasthenia".

Follow-up: Untraced.

Comment: Because of inadequate data about attitude and response to feeding, case must be considered doubtful.

CASE 11

Boy aet. 13, admission 27.iv.37. Four years' disinclination to eat, nausea and constipation, and failure to grow. Physical examinations negative. Fifteen months' psychotherapy before admission, without benefit.

Family history: Mother neurotic, has digestive troubles. Two healthy younger brothers.

Personal history: Feeding difficulties in infancy and childhood (humanized milk till four or five years old). Succession of nurses. Neurotic traits, Boarding schools 6½-12; unhappy. Musical, artistic, precocious.

Personality: Sensitive. Fearful of being disliked, always questioned things; afraid to do things alone. Meticulous and tidy; lazy.

Health: Jaundice aet. 10. Obsessional fears of dirt.

On admission: Weight: 3 st. 8 lb. 4 oz., Height: 4 ft. 4½ in. Marasmic.

Mentally: Believes enjoying food to be wrong; food "harmful, blocks bowels". Weeps if pressed to eat. Regards ideas as unreasonable, but they have near-delusional force. Abnormally quiet and contented.

Spec. invest.: Physical neg. I.Q. (Cattell Test, scale 3) 140, (Kohs blocks) 117.

Treatment: High caloric diet. Ant. Pituitrin 1 c.c. daily. Psychotherapy three times weekly.

Course: Hides and disposes of food. Unable to swallow stomach tube. No improvement.

Diagnosis: "Anorexia nervosa associated with pituitary disorder".

Follow-up: Aet. 28, working. Said to be "Clever at some things, but to lack everyday judgment". No further details.

Comment: A severely disturbed child with obsessional and phobic symptoms relating to eating and digestion. Similarities to cases 18 and 31 among the female cases. Marked stunting of growth. Endocrine status uncertain.

CASE 18

Married man, aet. 45. Admission 12.x.38. Two-three years' unpleasant abdominal sensations, anorexia, loss of weight. *Course:* no work two years; became depressed.

Family history: Negative.

Personal history: Normal child; average scholar. Served, Army 1914-19; good record.

Sex: Married 1919. S.I. infrequent.

Personality: Jolly, never worries.

Health: Traumatic castration 1919. 60 per cent. pension. Subsequently felt exhausted and had to rest three months every year; no depression.

On admission: 3 stone below normal weight. Bilateral scars and absence of testes. Chronic constipation. Hysterical tenderness of abdomen.

Mentally: Mildly depressed; entirely preoccupied with his "indescribable" abdominal sensations; unoccupied. No delusions or hallucinations. Great desire for cure expressed.

Spec. invest.: Routine neg. No hormone assays.

Course: Took diet with persuasion. Importunate to have sensations relieved. Discharged National Emergency, unchanged.

Clinical Conference: "No organic basis, no psychosis; condition most nearly resembles anorexia nervosa. Diagnosis: ? Anorexia nervosa.

Follow-up: Found drowned two days after leaving hospital.

Comment: Hypochondriacal preoccupations main feature; attitude to food not fully described. Atypical case, ? endocrine factor.

CASE 36

Single male, aet. 21. Admission 17.iv.50. Six years anorexia, loss of weight, tiredness, headache, giddiness.

Attitude to illness: Believes certain foods are responsible.

Other symptoms: Inferiority feelings, depression, suicidal thoughts.
Family history: F. neurotic, little feeling for patient. M. too protective. Only child.
Personal history: Fearful, timid child.
Interests: Reading.
Occupation: Assistant librarian.
Sex: Guilt over masturbation. Has had two girl friends.
Personality: Hypochondriacal, many food fads, vegetarian. Poor mixer.
Health: Symptoms continuous since aet. 15. Developed P.T. aet, 22.
On admission: Weight, 8 st. 6 lb. Height, 5 ft. 8 in. Marked wasting. Cold extremities.
Mentally: Cause of illness: Dietary: certain foods affect his body in certain ways. Depressed. No delusions, hallucinations or obsessions.
Spec. invest.: X-ray chest 1952—active pulmonary tubercle. Sputum negative. E.E.G. abnormal.
Treatment: 8 E.C.T.—40 psycho-therapeutic interviews.
Course: Improvement. Follow-up in 1953—symptoms free—10 stone.
Diagnosis: Anorexia nervosa.
Follow-up: As above.
Comment: Three psychiatrists independently diagnosed him as suffering from anorexia nervosa.

REFERENCES

AUB, J., *Dig. Neurol. Psychiat.*, 1945, **13**, 31.
BARRY, J., *Amer. J. Orthopsychiat.*, 1939, **9**, 355.
BARTELS, A. D., *Acta Med. Scand.*, 1946, **124**, 185.
BERKMAN, J. M., *Med. Clin. N. Amer.*, 1939, July, 901.
BOWLBY, J., *Maternal Care and Mental Health*, 1951, W.H.O. Mono. Ser.
BROWN, L., *Med. Press*, 1931, **131**, 308.
CARRIER, J., *L'Anorexie Mentale*, 1939, Paris. Le Français.
CARMODY, J. T. B., and VIBBER, F. L., *Ann. Intern. Med.*, 1952, **36**, 647.
COBB, S., *Borderlands of Psychiatry*, 1943, London. Oxford University Press.
Idem, Emotions and Clinical Medicine, 1950, London. Chapman and Hall.
DECOURT, J., *Sem. Hôp. Paris*, 1947, **23**, 2742.
Idem and MICHARD, J.-P., *Bull. Mem. Soc. Méd. Hop. Paris*, 1950, **66**, 1608.
DuBOIS, F. S., *Amer. J. Psychiat.*, 1949, **106**, 107.
ESCAMILLA, R. F., *Ann. intern. Med.*, 1949, **30**, 249.
FARQUHARSON, R. F. and HYLAND, H. H., *J.A.M.A.*, 1939, **111**, 1085.
FRASER, R. W., FORBES, A. P., ALLBRIGHT, T., SULKOVITCH, M., and REIFENSTEIN, E. C., *J. Clin. Endocrinol.*, 1941, **1**, 234.
Idem and SMITH, P. H., *Quart. J. Med.*, 1941, **10**, 297.
GULL, W. W., *Clin. Soc. Trans.*, 1874, **7**, 22.
HEMPHILL, R. E., *Lancet*, 1944, ii, 345.
Idem and REISS, M., *J. Ment. Sci.*, 1942, **88**, 559.
HUBBLE, D., *Lancet*, 1952, i, 1123.
HURST, A. F., *British Encyclopaedia of Medical Practice*, 1936, **1**, 598. London. Butterworth.
KAY, D. W. K., *Proc. Roy. Soc. Med.*, 1953, **46**, 669.
KLINEFELTER, H. F., ALBRIGHT, F., and GRISWOLD, G. C., *J. Clin. Endocrinol.*, 1943, **3**, 29.
MAYER-GROSS, W., MOORE, J. N. P., and SLATER, P., *J. Ment. Sci.*, 1949, **95**, 80.
McCULLAGH, E. P., and TUPPER, W. R., *Ann. intern. Med.*, 1940, **14**, 817.
McGREGOR, T. N., *Brit. Med. J.*, 1938, i, 717.
MILES, H. H. W., BARRABEE, E. L., and FINESINGER, J. E., *Psychosom. Med.*, 1951, **13**, 83.
MORLOCK, C., *Proc. Mayo Clinic*, 1939, **14**, 24.
MOULTON, R., *Psychosom. Med.*, 1942, **4**, 62.
NEMIAH, J. C., *Medicine*, 1950, **29**, 225.
NICOLLE, G., *Lancet*, 1938, ii, 1173.
PALMER, H., and JONES, M., *Arch. Neurol. Psychiat.*, 1939, **41**, 526. Chicago.
RAHMAN, L., RICHARDSON, H. B., and RIPLEY, H. S., *Psychosom. Med.*, 1939, **1**, 335.
REES, L., *J. Ment. Sci.*, 1949, **95**, 880.
REIFENSTEIN, E. C., *Med. Clin. N. Amer.*, 1946, **30**, 1103.
REISS, M., *J. Ment. Sci.*, 1943, **89**, 270.
RICHARDSON, H. B., *Arch. intern. Med.*, 1939, **63**, 1.
ROGERSON, C. H., HARDCASTLE, D. H., and DUGUID, K., *Guy's Hosp. Rep.*, 1935, **85**, 289.
ROSS, T. A., *An Enquiry into Prognosis in the Neuroses*, 1936, Cambridge University Press.
ROTH, M., *J. Electroenceph. Clin. Neurophysiol.*, 1951, **3**, 261.
RYLE, J., *Lancet*, 1936, ii, 893.
SARGANT, W., *Lancet*, 1951, ii, 87.
SCHER, N., *Brit. Med. J.*, 1946, i, 347.
SCOTT, W. C. M., *Brit. J. Med. Psychol.*, 1948, **21**, 241.
SEXTON, D., *Ann. West. Med. Surg.*, 1950, **4**, 397.
SHELDON, J. H., *Lancet*, 1937, i.
Idem, Proc. Roy. Soc. Med., 1939, **32**, 738.
SIFNEOS, P. E., *Amer. J. Psychiat.*, 1952, **109**, 356.

SLATER, E. T. O., *J. Neurol. Neurosurg. Psychiat.*, 1943, **6**, 1.
Idem and WOODSIDE, M., *Patterns of Marriage*, 1951, London, Cassell.
STENSTEDT, A., *A Study of Manic-depressive Psychosis*, 1952, *Acta. Psychiat. Neurol. Suppl.*,
    79. Copenhagen.
TALBOT, N. B., SOBEL, E. H., BURKE, R. S., LINDEMANN, E., and KAUFMAN, S. B., *New England
    J. Med.*, 1947, **236**, 783.
VENABLES, J. F., *Guy's Hosp. Rep.*, 1930, **80**, 213.
WALLER, J. V., KAUFMAN, M. R., and DEUTSCH, F., *Psychosom. Med.*, 1940, **2**, 3.
WHEELER, E. O., WHITE, P. D., and COHEN, M. E., *J.A.M.A.*, 1950, **142**, 878.