intervals for three years, or at least given the opportunity of visiting the clinic if they have any symptoms, severe flushing and minor genital lesions would be diagnosed and a correct dosage of stilboestrol established. By these simple measures most of the criticism levelled at radium could be met and further support given to it as a safe and effective agent in dealing with intractable bleeding at the menopause.

Summary

Severe or moderately severe flushing may persist for months or years in 50% of cases after the radium menopause (three times the normal incidence).

Only 50% of patients had interest in sex matters before treatment. Of the remainder every other case quickly became sexually anaesthetic after radium treatment. (No "controls" are available.)

Premature senility of the lower genital tract may follow soon after radium—for example, 5 out of 72 had a tender inflamed introitus, and 11 out of 68 had "pre-vaginitis" (red spots).

Responsibility for detection and treatment of the effects of radium rests with the gynaecologist rather than with the practitioner.

This report has been read and criticized by Professor H. N. Lloyd, Mrs. B. M. Willmott-Dobbie, Professor Dugald Baird, Dr. John Hewitt, and Dr. A. C. Crooke. Although unable to answer all the points they raised, it is a pleasure to acknowledge their help and useful suggestions. My thanks are also due to Sister M. Scotwell and to our technician, Miss M. E. Attwood, for their assistance in preparing this report.

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OBSERVATIONS ON THE TREATMENT OF THYROTOXICOSIS

BY

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There is much diversity of opinion regarding the treatment of thyrotoxicosis. Discussion still centres mainly on the relative merits of thyroidectomy and thiouracil treatment. Neither of these methods can, however, be regarded as wholly satisfactory, and no one would claim invariable success with either. An appreciable proportion of patients are found to relapse after either form of treatment; neither is completely devoid of risk, and there is the possibility, particularly after surgical treatment, of such sequelae as malignant exophthalmos or myxoedema. It is of course recognized that complete remission of thyrotoxic symptoms is obtained in a large number of cases treated either surgically or medically.

Astwood (1948), reviewing 400 cases treated with thiouracil, found that 85% of cases obtained satisfactory remission. Carrick Robertson (1948) noted improvement with the use of this drug in 62% of patients under the age of 21, but only in 43% of a series of 116 cases of all ages, while he claimed almost universally successful results with thyroidectomy. On the other hand, Goldman, cited by Astwood, obtained lasting relief in only 41.8% of cases treated surgically, and Vander-Laan and Swenson (1947) considered the results of thyroidectomy wholly satisfactory in only two-thirds of their cases.

Despite the satisfactory results not infrequently obtained in the treatment of thyrotoxicosis, it is apparent that the current methods are not always successful and that relapses are not uncommon. The purpose of this paper is to inquire into the circumstances which might determine this variability in response to therapy. The investigation is based on the examination of 265 patients referred to me on account of suspected thyrotoxicosis.

Diagnosis of Thyrotoxicosis

While the frank thyrotoxicosis of typical Graves's disease is easy to detect, many cases present difficulty in diagnosis. The recent method of studying excretion of radioactive iodine in the urine has emphasized rather than eliminated this difficulty, as it has shown that there are many "border-

TABLE I.—Analysis of 265 Cases Referred to Clinic Suspected to be Suffering from Thyrotoxicosis

Group	Female	Male	Total
A. Thyrotoxic	116	28	144
B. Goitrous but not thyrotoxic	91	2	93
C. Neurosis—no goitre or evidence of thyrotoxicosis	22	6	28
	229	36	265

FIG. 1.—Percentage of patients in each age group.

line" or doubtful cases. In any case of suspected thyrotoxicosis, nervousness is a feature. The combination of nervousness and thyroid enlargement may be wrongly taken to indicate thyrotoxicosis, as the thyroid may not be overactive although large, while, particularly in men, marked hyperthyroidism or thyrotoxicosis may exist with but slight increase in the size of the gland. Exophthalmos may occur without thyrotoxicosis and may be aggravated by thyroidectomy. Tachycardia is commonly found in nervous patients, whether thyrotoxic or not. Auricular fibrillation in a heart otherwise apparently normal is probably most commonly the result of thyrotoxicosis, but the latter condition may be quiescent although the cardiac irregularity persists. The B.M.R. is certainly raised in thyrotoxicosis, but it may be extremely difficult to obtain a truly basal estimation in a tense, nervous patient, and, in such, high figures may be recorded even in the absence of hyperthyroidism. While the blood cholesterol is commonly below normal its value is too variable to be of much diagnostic help.

Recognizing these difficulties, it is not surprising that in by no means all the cases in the present series could the diagnosis of thyrotoxicosis be accepted. Of the 265 cases,

as shown in Table I, only 144 were considered toxic, and 93, although having some degree of thyroid enlargement, non-toxic. The remaining 28 cases had no goitre and no symptom other than nervousness; these have been classified as "neurosis." The number of patients in the "non-toxic" group is so high relative to those in the toxic group that it might be considered that too rigid criteria were demanded for a diagnosis of toxicity. Circumstantial evidence in favour of the correctness of the classification is found in the incidence of cardiac arrhythmia among the toxic cases. As shown below, the incidence of this complication in the present series was found to be somewhat lower than that noted by other observers, which is contrary to what might be expected had the grouping been too highly selective. It may, however, be significant, as is considered later, that the average age of patients in the non-toxic group was less than in the toxic patients (Fig. 1).

Results of Treatment

Of the 144 thyrotoxic patients 116 were women. The age of the patients is shown in Fig. 2. It is seen that among women the largest age group (comprising 33.5%)

FIG. 2.—Sex distribution of thyrotoxic patients in each age group.

was at the time of the menopause, while in men the peak (42%) is reached a decade later.

All these patients were treated with methyl-thiouracil, with two exceptions—one who was found to have a persistently low white cell count and for whom it was considered thiouracil might therefore be contraindicated, and another who for social reasons could not attend for the supervision necessary with medicinal treatment. The patients treated with thiouracil have all been observed for at least 18 months. The results of treatment are summarized in Table II. A satisfactory remission of symptoms has been obtained in 85 cases, of which 76 have ceased treatment for more than 12 months. There are 50 patients still receiving the drug, but it is anticipated that a considerable number of them will be able eventually to discontinue it. Thyroidectomy was performed on seven cases following a period of thiouracil treatment. In five of these complete remission of symptoms had been obtained and operation was carried out, for cosmetic reasons, at the patient's request. One patient elected thyroidectomy before satisfactory control had been obtained; while another, who had already undergone thyroidectomy on two occasions, so readily developed marked leucopenia each time thiouracil therapy was attempted that she had to be referred once more for surgical treatment.

TABLE II.—Analysis of Cases Treated with Thiouracil

Age Group	Total Treated	Off Treatment		Still on Treatment		Subsequent Thyroidectomy
		More than 12 Months	Less than 12 Months	More than 12 Months	Less than 12 Months	
Under 21	7	4 (1)	—	1 (1)	—	1
21-30	34	19 (2)	4	9	1 (1)	1
31-40	36	20	2 (1)	14 (3)	—	—
41-50	43	23 (5)	2 (1)	14 (2)	—	4
51-60	16	8	—	8 (2)	—	—
Over 60	6	2	1 (1)	2	—	1
	142	76 (8)	9 (3)	48 (8)	2 (2)	7

The figures in parentheses indicate the number of patients who had relapsed after a previous course of thiouracil.

Relapses

It will be seen from Table II that 21 cases relapsed after treatment with thiouracil. These had received a course of treatment averaging 13 months, and this had been followed by a period of remission, the average duration of which was eight months; thereafter thiouracil was resumed. Eleven patients have again had satisfactory remission of symptoms and have been able to abandon the drug, eight for more than 12 months; the remainder are still receiving thiouracil.

Experience showed that patients who had previously undergone thyroidectomy were more difficult to control and that they tended more readily to relapse if thiouracil therapy was stopped after control had been effected. This is in accord with the findings of Cookson and Staines (1947), who, after treating seven similar cases for 18 months, obtained remission in only two. In the present series there were 14 such cases, the effect of treatment on which with thiouracil is summarized in Table III. It is seen that 10 of

TABLE III.—Thiouracil Treatment of Thyrotoxic Patients Who Had Previously Undergone Thyroidectomy

Age Group	No. Treated	Off Treatment	Still on Treatment	Thyroidectomy Repeated
21-30	2	—	2 (1)	—
31-40	2	—	2	—
41-50	9	2 (1)	6 (3)	1
51-60	1	1	—	—
	14	3 (1)	10 (4)	1

The figures in parentheses indicate the number of patients who had relapsed after a previous course of thiouracil.

these are still receiving the drug (in four cases it has been administered continuously for four years). The case submitted to repeat thyroidectomy is that referred to above in which there was marked sensitivity to thiouracil as indicated by severe leucopenia.

Comparison is made in Table IV between the results on patients treated initially with thiouracil and on those to whom the drug was administered after previous thyroid-

TABLE IV.—Effect of Methyl-thiouracil Treatment on Patients (A) Without, and (B) After Previous Thyroidectomy

	No. Treated	Off Treatment	Still on Treatment	No. of Relapses	Subsequent Thyroidectomy
A	128	82 (64%)	40 (31%)	16 (12.5%)	6 (5%)
B	14	3 (21%)	10 (71%)	5 (36%)	1 (7%)

ectomy. In the former group the relapse rate was 12.5%, while in the latter it was 36%. Of those treated only with thiouracil 64% are in a state of remission after abandonment of the drug. A considerable number of those still under treatment will, it is anticipated, come into this category later, and, even allowing for the possibility of some relapses, it would seem a fair estimate that at least 75% of the cases treated will have satisfactory remission of symptoms after stopping thiouracil. On the other hand,

certain cases seem to require treatment for an indefinite period. This applies particularly to the post-thyroidectomy patient; of such cases in the present series 71% appear to be of this type.

Cardiac Arrhythmia

Brief reference may be made to this complication of thyrotoxicosis. As shown in Table V, auricular fibrillation was noted in 16 cases (11.1%). One patient was treated

TABLE V.—Incidence of Auricular Fibrillation and its Control with Medical Treatment

	No. of Cases	Cardiac Arrhythmia	Rhythm Restored
Various authors, 1944-6*	268	40 (15%)	27 (67.5%)
Cookson and Staines (1947) ..	95	16 (17%)	8 (50%)
Clarke (1948) ..	6	6	3 (50%)
Goodwin (1949) ..	144	28 (19%)	13 (46.5%)†
Vérel (1949) ..	62	10 (16%)	9 (90%)
Present series ..	144	16 (11.1%)	11 (73%)

* Nussey (1944), Grainger *et al.* (1945), McGavack *et al.* (1945), Cookson (1945), Wilson (1946). † During this investigation into the effects of thiouracil, quinidine was not used.

surgically; of the remainder treated with thiouracil 11 (73%) regained normal rhythm, three requiring quinidine in addition. These results are comparable with those of other observers, which are summarized in the table. As might be expected, the higher the age group the greater was the proportion of patients found to suffer from auricular fibrillation (Table VI).

TABLE VI.—Age Incidence of Auricular Fibrillation in Thyrotoxic Patients

Age Group	No. Showing Arrhythmia	Percentage in Each Age Group	Sinus Rhythm Regained	Arrhythmia Persists
Under 21 ..	0	0	—	—
21-30 ..	0	0	—	—
31-40 ..	1	3	1	—
41-50 ..	6	14	4	2
51-60 ..	5	31	4	1
Over 60 ..	3	50	2	1

Complications of Treatment

Some degree of leucopenia was commonly encountered, but was rarely sufficient to call for discontinuance of thiouracil. There were, however, two fatalities—one patient, a young girl who had been treated with thiouracil and had remained well thereafter for several months, relapsed. It was suggested to her doctor that she should again be given methyl-thiouracil as an out-patient. She did not return to the clinic, and it was later discovered that she had developed severe sore throat, and, suspected to be suffering from diphtheria, had been removed to an isolation hospital, where she died soon after admission, throat swabs proving negative for that infection. It seems certain that her death was attributable to acute agranulocytosis.

The other patient, a middle-aged woman, developed marked leucopenia, and thiouracil treatment was stopped. She was kept under observation; folic acid and other therapeutic agents were tried, but the white cell count remained persistently low. More than a year later, although no further thiouracil had been administered, she suddenly developed severe epistaxis and died; necropsy revealed very marked hyperplasia of the bone marrow and splenomegaly, compatible with hypersplenism. Other toxic manifestations of this form of therapy were encountered in mild degrees, but did not interfere with treatment. One strange sequel, which does not seem to have been reported previously, was noted in two male patients who, after thyrotoxicosis was controlled, grew hair on areas of scalp which had been bald for years.

Psychiatric Aspects of Thyrotoxicosis

While it is true that a large proportion of thyrotoxic patients obtain satisfactory remission of symptoms, whether treated surgically or with thiouracil, it is apparent that they vary greatly in the manner in which they respond to treatment and in their liability to relapse. Some factor must exist to explain these differences.

A hereditary tendency is found in many patients. In the present series of 144 thyrotoxic patients a familial history was obtained in 22 (15.3%). In the non-toxic group of 93 patients a familial history was given by 11 (11.8%), while no patient in the third "neurosis" group gave such history. It has been suggested by Bartels (1941) that a defect, probably of the thyroid, is inherited. While this possibility cannot be denied, it is conceivable that a thyrotoxic mother may so affect the environment of the child that the latter may develop emotional disorder which may prove to be the background for the development of thyrotoxicosis.

Although for many years considered as a possible precipitating factor of thyrotoxicosis, emotional disturbance as the essential cause of the disorder has not gained universal acceptance. Langdon Brown (1932) wrote: "I am more and more impressed with the influence of emotion in the causation of Graves's disease." On the other hand, it has been postulated by Linnell and Greene (1947) that the essential lesion is in the hypothalamus, which, it is suggested, becomes hypersensitive and reacts to even a normal blood thyroxine. Dealing with the latter hypothesis, Means (1949) asks why this change in sensitivity should occur. It seems possible that if altered function of the hypothalamus is established the cause may be attributable to emotional influences on it.

Less attention appears to have been given to psychological disturbances in the treatment of thyrotoxicosis. Kiene and Dixon (1931) examined 15 patients who had previously undergone thyroidectomy and, concluding that recurrence of symptoms would not occur if nervous tension could be relieved, recommended complete psychiatric study of all cases of hyperthyroidism. Such a study was made on 200 thyrotoxic patients by Conrad (1934), from which she formed the opinion that therapy should include both means, such as partial thyroidectomy and also psychiatric guidance. The value of the latter form of treatment in restoring these patients to useful satisfactory life has recently been advocated by Lidz and Whitehorn (1949).

In the treatment of the patients in the series under review it soon became apparent that continuing emotional disturbance was always to be found in those who proved difficult to control. At this time the services of a psychiatrist, Dr. Adam Milne, became available, and he co-operated in the work of the thyroid clinic. His assistance in elucidating the emotional difficulties and in advising about their solution was invaluable.

While the association of physician and psychiatrist in the treatment of thyrotoxicosis may be regarded as ideal, one must agree with Lidz and Whitehorn that the brunt of helping the patient to regain emotional equilibrium must in general fall on the internist. Apart from the fact that the services of an expert psychiatrist are not always available, there is usually little difficulty in obtaining information from the patient about the disturbing factors in the life situation, for, as these writers point out, the thyrotoxic subject is generally an "outgoing" person who relates to others easily. Moreover, they consider there may be danger in energetic psychiatric approach, and recommend

an active "superficial" psychotherapy, amounting essentially to prompt decision and advice on practical details.

It is not possible here to give details of all cases in this series, but below are a few typical histories.

Illustrative Cases

Case 1: Rapid Response to Treatment.—A man aged 27, when first seen, was a classical example of thyrotoxicosis, with a large vascular goitre, exophthalmos, and all the typical symptoms. A remarkable psychiatric history was obtained from him. He had been an unstable child, timid and afraid of the dark, because of association with an apprehensive nervous mother and quarrels and drunkenness in his home. At 16 he had a "nervous breakdown" associated with worry and feelings of guilt over masturbation. He was an unsteady worker because, as he thought, conditions always affected his health. Just before joining the Army he had a "nervous breakdown," on account of which he left work. During this time he was "accidentally" called up for the Army. He was sent overseas and seems to have been intensely phobic about his health from the beginning. In India he developed nervous diarrhoea. He became panic-stricken when he got malaria, believing that because of his masturbation he would not be able to withstand it, and from then onwards his diarrhoea continued. He was invalided home with a diagnosis of sprue, although it seems probable that the disorder was of nervous origin. On returning to the United Kingdom he had an acute psychotic breakdown and was admitted to a military mental hospital, being eventually discharged from the Service. Owing to gross instability he lost one job after another. Then he developed syphilis—quite credibly, as he claimed, at the first possible exposure to infection. Although he sought immediate treatment this infection appears to have caused intense nervous upset and phobias of ill-health. Soon afterwards he developed the thyrotoxic symptoms. Although it was thought at the onset that the emotional disturbance was the essential disorder, his thyrotoxic state was so pronounced that it was considered necessary to bring this under control with thiouracil before any psychiatric approach was made. He responded remarkably rapidly to this treatment and soon began to receive simple psychiatric guidance. In a short time he declared he felt better than he ever had, and ascribed this to the reassurance he had got regarding masturbation. Thiouracil was stopped after 10 weeks and he has been under observation now for 16 months. During this time there has been no evidence of recurrence of thyrotoxicosis.

Case 2: Rapid Response to Treatment.—A fireman in the River Fire Service, aged 36, had been at work on a fire aboard ship and was trapped in the burning hold. He thought at the time that there was no way of escape, but eventually got out safely. When first seen nine months later he had lost 22 lb. (10 kg.) in weight and showed all the signs of thyrotoxicosis. He made a dramatically rapid recovery after only eight weeks' treatment with thiouracil. He has been kept under observation for three years and has remained perfectly well. This man, who made an unusually rapid response, seemed, unlike the usual thyrotoxic patient, not to have been nervous previously. Moreover, this form of psychological trauma as a precipitating factor is unusual.

Case 3: Requiring Maintenance Dose.—A woman aged 30, when first seen, showed all the classical features of thyrotoxicosis with considerable goitre which had developed within the previous 18 months. Nervousness had been her complaint for 2½ years, but she denied knowledge of any precipitating cause. She was the daughter of a West Highland crofter and admitted to excessive shyness in childhood. She has always been a nail-biter. At 19 she became a mental nurse and subsequently married an attendant in a mental hospital. She came to Glasgow, where she encountered serious housing difficulties. Shortly before the onset of symptoms her father, to whom she appears to have been over-attached, died. She had one child, and was always apprehensive about her health. Soon after her father's death she gave birth to her second child. At the time of onset of thyrotoxic symptoms, there-

fore, she had anxiety regarding housing and additional family responsibility, and great emotional disturbance from bereavement. This case illustrates the rather frequent association of bereavement with the onset of symptoms. Moreover, while the history of emotional upset before the onset of symptoms is highly suggestive, it is to be noted that the patient herself was unaware of a precipitating cause of nervousness.

Case 4: Requiring Maintenance Dose.—A man aged 58 presented marked symptoms of thyrotoxicosis with considerable exophthalmos. He appeared to have had a lifelong mild chronic anxiety state, dating from childhood, with fear in the dark, and a psychiatric illness of some severity during the first world war. Ever since that time his consumption of alcohol can only be described as profound, the anxiety state possibly being to some extent causative. In recent years he has worked during the night as a baker, and by day occupied himself as a police-watcher for a street bookmaker. This caused such nervous tension that he found himself incapable of carrying on if he was not "properly drunk." Latterly he became obsessed by the thought of police, seeing them in his sleep and panicking at the least sound. Mere mention of the word "police" caused noticeable increase of upper-lid retraction. He responded satisfactorily to thiouracil, and fibrillation settled eventually after quinidine. He has been under observation now for four years, during which time it has been found impossible to discontinue the thiouracil.

Case 5: Requiring Maintenance Dose, then suddenly able to abandon it.—A woman aged 25 gave a history that she had always been nervous. About two years before the date on which she was first seen she was working as a typist with an employer who was very exacting and sarcastic, and she attributed her greatly increased nervousness to this. At about the same time she got engaged to be married to a man who lived in London. She was markedly thyrotoxic, but made a very satisfactory response to thiouracil treatment. However, she remained nervous. She was obviously of a type that was easily upset, and described how she got very readily "into a flat spin" at her work. It transpired that she could not get a house in London, and under no circumstances would she go and live with her prospective mother-in-law. It was impossible for her to see her fiancé, because of distance and their different times of holiday. She continued in this state, although reasonably controlled with thiouracil, but there seemed no prospect of being able to abandon the drug until some eight months later when she broke the "engagement." Her condition improved immediately, and she was able to give up thiouracil. She has remained well without it for the past twelve months.

Case 6: Relapse.—A woman aged 25 with pronounced thyrotoxicosis gave a history of having been nervous all her life. She lived under poor social conditions in her parents' home, together with her husband and her five children. She was obviously terrified of another pregnancy. Later it transpired that at the age of 18 she had been raped one day returning from work. When she eventually told of this she said that she had forgotten about it, though she was then able to give the most detailed description of the incident. It is possible that she did in fact have amnesia of the event until it was brought to light in the course of psychiatric interview. She made a satisfactory response to thiouracil treatment and appeared to be very well until about six months later, when she again became pregnant. Although she was still on a maintenance dose of 50 mg. of methyl-thiouracil daily, her condition relapsed seriously. The pregnancy was terminated and sterilization performed. From that time onwards she has been well without thiouracil, maintaining her weight and a normal pulse rate. The goitre, however, was still considerable, and as she was worried about the appearance of this she eventually underwent thyroidectomy.

Case 7: Post-thyroidectomy Relapse.—A woman aged 53 underwent thyroidectomy first in 1941 and again 18 months later. Evidence of thyrotoxicosis soon became manifest again. Thiouracil was started in December, 1944. She has never been able to do without it since. On two occasions it was abandoned for periods of two months but had to be started again.

She has always been an emotional, insecure woman. For years she had anxiety about the health of her husband, who suffered from chronic heart disease and mental disorder until his death in August, 1947. She continues to be over-anxious and is easily upset emotionally. She suffers from paroxysmal auricular fibrillation and often complains of varying symptoms of a functional character.

Discussion

The above case histories are typical of the whole series and illustrate the important psychological features present in every patient. It would appear that emotional difficulties not only play an all-important part in precipitating a thyrotoxic state but also account for the differences in response to treatment and the tendency to relapse in certain cases. Accordingly it seems essential that in the treatment of thyrotoxicosis attention must be focused on the psychiatric aspects. In most cases the acute symptoms have to be controlled with thiouracil before the patient becomes responsive to simple psychotherapy, but the latter may, as in Case 1, prove the most important part of treatment. Admittedly the emotional problem may be difficult to solve and the thyrotoxic symptoms be kept in control only by continued therapy. Nevertheless, the discovery of the psychological disturbance may explain why a patient is unable to abandon thiouracil without relapsing and make it possible to give at least some advice and guidance, which often proves beneficial. It seems particularly desirable that examination of the psychological aspects should be attempted before any decision is made on thyroidectomy, as it might be possible in some cases to improve the patient without operation, while it might cause rejection as unsuitable of those cases which subsequently relapse and which then prove so difficult to control with thiouracil.

In conclusion, reference must be made to the second group in this series. These patients were nervous and had thyroid enlargement, but they were not thyrotoxic, at any rate at the time when examined. Yet four of the 93 patients had had thyroidectomy and a considerable number had in the past been treated with thiouracil without benefit. It is to be noted that, as shown in Fig. 1, these patients belonged to the younger age groups and that they gave a family history of thyrotoxicosis almost as high as that of the thyrotoxic group—11.8% compared with 15.3%. It seems an irresistible conclusion that these nervous goitrous patients are potential sufferers from thyrotoxicosis within the next 10 to 20 years. In view of what has been said above, it would appear desirable that such patients should have early psychiatric treatment in the hope that thereby this serious complication may be averted.

Summary

Examination was made of 265 patients suspected to be suffering from thyrotoxicosis. In only 144 cases was this diagnosis accepted.

Over 60% of thyrotoxic patients gained, and possibly at least 75% will ultimately gain, remission of symptoms after treatment with methyl-thiouracil. Patients who had previously undergone thyroidectomy often required a maintenance dose for an indefinite period and proved particularly liable to relapse if the drug was discontinued.

Inquiry into the psychiatric history revealed in every case disturbances which seemed of great importance in precipitating thyrotoxicosis, in accounting for relapse after either thiouracil therapy or thyroidectomy, and in explaining the necessity for continuing a maintenance dose. An attempt to deal with the emotional factor is regarded as an essential part of the treatment of thyrotoxicosis.

Attention is drawn to a group of patients complaining of nervousness and showing some thyroid enlargement but who

were not regarded as thyrotoxic. It is suggested that such patients may be prone to develop toxic goitre in the future and that psychiatric treatment might be of prophylactic value.

Grateful acknowledgment is made, to Dr. Adam Milne, now physician-superintendent, King's Seat Mental Hospital, Aberdeen, for his assistance in this investigation.

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BODY WEIGHT IN GRAVES'S DISEASE

BY

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Loss of weight is one of the classical features of Graves's disease. It is recognized, however, that sometimes the loss may be insignificant, and occasionally weight may even rise while the disease is still active. Thus Joll (1939) said that "rarely the patient for a time actually gains weight, even very considerably." Linnell, Keynes, and Piercy (1946) pointed out the error of regarding loss of weight as a constant feature of thyrotoxicosis and observed that "maintenance, or even an increase, of weight is not very uncommon even in patients with primary toxic goitre."

Means (1948) noted that the nutritional state in Graves's disease varies greatly but in the average case weight loss is not evident. He added that occasionally a patient actually gains weight while thyrotoxic. A "plump" type of the disease was described by Trotter and Eden (1941). They studied eight patients who were plump in appearance and had gained weight before or after admission to hospital. Apart from the increase in weight these cases had several other features in common, and it was considered that they constituted a special type of Graves's disease. Moreover, differentiation of this type was found to be of practical importance because operative treatment gave unsatisfactory results.

The object of the present investigation was to study the nutritional state in Graves's disease, and the findings are based on 50 cases observed and treated during the past three years. Patients with hyperfunctioning adenoma of the thyroid (Plummer's disease) are not included.

Material and Methods

The series consisted of 47 women and 3 men; their ages varied from 22 to 54 years. Patients were accepted for the investigation only if the diagnosis was undoubted and complications, such as diabetes, were absent; otherwise