been collected by six of the centres (Table IV). Three facts have been established: (a) with the comparatively small doses of penicillin used only 6 of 26 previously untreated patients were cured; (b) the fever returned or was not controlled in 11 of the 26 previously untreated cases; (c) in the 13 who died with uncontrolled fever, organisms were seen post mortem in the vegetations of 6. It is not known whether larger doses will produce better results, but it is

TABLE IV.—*Bacteriologically Negative Cases*

	Dosage	No. Treated	Died with Fever	Controlled	Died with Fever Uncontrolled	Fever Returned	"Cured"
No previous treatment with penicillin	2,000,000 units for 1 month or more	2	2	—	—	—	—
	500,000 units for 1 month (approx.)	15	5	6	3	1	1
	250,000 units for 1 month (approx.)	7	2	1			4
	Unclassifiable	2		1			1
	Total	26	9	8	3	6	
Previously treated with penicillin	2,000,000 units for 1 month or more	1		1			
	500,000 units for 1 month (approx.)	4	3	1			
	250,000 units for 1 month (approx.)	2		2			
	Unclassifiable	2	1	1			
	Total	9	4	5			

suggested that these patients should be given 2,000,000 units a day and that the dose should be increased if the clinical response is unsatisfactory. In view of the importance of establishing the coefficient of resistance of the infecting organism it is unwise to abandon blood cultures until at least three have proved negative. An anaerobic culture should always be included.

Factors Affecting Prognosis.—In general the recent results confirm the conclusions regarding prognosis and causes of death discussed in the previous report. A detailed analysis of these patients will be incorporated in a review of the subject which is now being prepared.

Conclusions

Patients with subacute bacterial endocarditis should be given at least 2,000,000 units of penicillin a day for a month or six weeks.

When the infecting organism is highly resistant to penicillin, or when it cannot be isolated, it is difficult to estimate the appropriate dose. Some factors involved in making this assessment are discussed.

The incidence of delayed relapse or reinfection is approximately 2% per annum.

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SUDDEN OBESITY AND PSYCHOLOGICAL TRAUMA

BY

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It has long been recognized that loss of weight can accompany psychotic and psychoneurotic illnesses such as depression and anorexia nervosa. Clinicians also meet atypical cases of depression in which there is an increase of weight, and this has been vaguely linked with endocrine disturbances, such as may occur at the female and male climacteric. This paper is concerned with a group of cases showing a sudden onset and rapid development of obesity, with or without amenorrhoea and menstrual disturbances, which gives rise to a syndrome of obesity, anxiety, tension, and depression.

The investigation first arose when it was observed that some obese patients who failed to respond satisfactorily to the usual methods of treatment dated their obesity and also some psychoneurotic symptoms to a specific incident that might well have inflicted psychological trauma. We found that too little attention had been paid to the emotional factors in the first instance, and the patients had been treated on an organic basis for long periods. We do not claim that the treatment pursued with this group is primarily aimed at reducing weight, but we have used it to alleviate the associated mental distress and have found that patients often show a parallel reduction of weight and become more amenable to accepted methods of treatment of obesity.

The problem of obesity has been extensively investigated by physiologists for many years, and no essential underlying disorder of metabolism has been convincingly demonstrated. Newburgh (1942) reviewed the subject and came to the conclusion that excessive intake of calories with reduced activity could account for almost every case. He explained the irregularity of loss of weight when on a strictly limited calorie intake as being due to fluid retention, and quoted an example that demonstrated this point clearly.

Effect of Lesions of the Hypothalamus

Lesions of the hypothalamus in animals in which the anterior lobe of the pituitary has either been removed or left intact result in obesity (Hetherington, 1943). This obesity does not, however, follow extensive damage to the hypophysis provided the hypothalamus is intact. These clear-cut experiments of Hetherington's have solved the controversy that has lasted for over 30 years between Fröhlich, who maintained that damage to the hypophysis was the necessary factor, and Erdheim, who believed the essential lesion must be in the hypothalamus. Animals that have had suitably placed lesions in the hypothalamus not only show an increase in appetite that accounts for their obesity in almost all instances, but the manner in which they eat their food changes from the normal habit of the species.

The appetite of the animals operated on is described as voracious, savage, or wolfish by various authors, and rats

According to a report (B.U.P.) Dr. Robert Coghill, who played an important part in the development of penicillin mass-production, told a meeting of the American Chemical Society that, although 200 antibiotics had been investigated, only six have appeared on the market, and of these two are of limited use only. While the term "miracle drug" could legitimately be applied to penicillin, Dr. Coghill stated that the chief miracle in connexion with one or two currently used antibiotics would be if they were still in use in five years' time. He added, "The truth of the matter is, unfortunately, that the vast majority of antibiotics are for a variety of reasons utterly worthless for human therapy."

that normally store their food and eat it by night will devour every morsel immediately it is dropped into their cage. The increased intake of food accounts for the increase in weight when the animal is fed *ad libitum*. But a small proportion of rats whose food is restricted show some minor increase in weight over the control animals, indicating that in them a mechanism other than increased intake is operating. This may be related to the change in feeding habits to which we have already referred, as Tepperman *et al.* (1943) have shown that normal rats will convert glucose into fat at an accelerated rate if the animals are trained to eat their normal 24-hour portion within a short time.

It has also been shown that rats with a hypothalamic lesion and hyperphagia had exceptionally high R.Q.s—well over unity during the absorption of glucose, indicating that most of the carbohydrates were being converted into fat. This phenomenon develops only gradually within the first week after operation (unlike the increase in appetite and the temperament changes, which can be observed almost before the animal is out of the anaesthetic), suggesting that it is the result of the altered feeding habit and hyperphagia. A marked change in temperament as well as in appetite has been observed in these animals, and they may become aggressive and savage.

The effect of emotions acting through the hypothalamus in man has been well demonstrated by Verney (1946) in his series of experiments on the action of the antidiuretic hormone of the posterior pituitary. He has shown that emotional stress, by acting on the hypothalamic nuclei, releases from the pituitary the antidiuretic substance, and has suggested that conditions associated with low sympathetic tone in man might be favourable to prolonged secretion of the substance. His experiments may explain the undoubted retention of fluid that is shown by many obese subjects who have no organic lesion of the hypothalamus but in whom emotional disturbances may have produced effects on the hypothalamic nuclei.

The enormous increase in appetite and very definite alteration in temperament and activity of animals with organic lesions of the hypothalamus may be in part mirrored by our patients through stimuli coming from the higher senses acting on the nuclei in the hypothalamus in a manner similar to that already demonstrated by Verney in his work on the supraoptic nucleus. Thus there is a background of evidence from careful physiological observations to account for our finding that violent emotional stress may result in rapidly developing obesity.

The following three cases are representative of the group we are studying.

Case 1

A woman aged 38 complained on admission to hospital in June, 1947, of rapid increase of weight and amenorrhoea since suffering a very severe shock in 1943, with a further increase in weight in 1944 after a narrow escape in a bomb incident. At the same time she complained of an inability to pass sufficient urine, difficulty in concentration, and poor memory. Her father died, aged 58, from coronary thrombosis and "urinary retention." He was a military bandsman, a strict disciplinarian, and short-tempered, and would beat his children. He taught them to hide their feelings. Her mother had a "cold temperament," would not accept her children's confidences, discouraged their emotion, but gave in to their wishes. There was little love between the parents, only duty. She had a lonely childhood and average schooling, and was always afraid of expressing any emotion. She was a student teacher till 18, then studied music and passed her L.R.A.M. For a while she earned her living as a piano-teacher and gave piano recitals. She married three times.

The first marriage, at 18, was to a man 14 years her senior, who was irresponsible, "too sexual for her immature years," and constantly in debt. He died 14 years ago. They had two children, a girl—a brilliant child who died in 1943 at the age of 13 from a sarcoma of buttock—and a boy, now aged 14. The second marriage was a failure, as her husband was impotent, had "brain storms," and led her a "shocking life." In order to keep the peace for her children's sake, she says, she had to shut out her emotions and give up piano-playing because it irritated him; and to be away from him as much as possible she joined the police force in 1939, as she was a tall, powerful woman brought up to appreciate discipline and order. This marriage was annulled after five years' misery. The third marriage, in 1945, was to a police sergeant. It was satisfactory at first, but she soon became frigid, and now feels socially and intellectually her husband's superior, although she loves him.

In 1943 she experienced a severe shock when told that her daughter had a sarcoma of buttock and had only a few months to live. "I showed no emotion. I did not feel any. I was dead." Her periods stopped and she was "mentally distressed and began to swell." She increased in weight from 12 to 19 st. (76.2 to 120.6 kg.). The amenorrhoea lasted three months, and after that she saw only a few spots. The child lay ill at home for months, and required frequent morphine injections. The patient stayed up with the child most of the night and then had to go on duty. She kept up appearances before the child, but also experienced strong feelings of guilt because of previous lack of affection for her.

In 1944 she experienced another severe trauma. While on duty alongside an escalator at Waterloo Station a flying bomb crashed near her and there were numerous casualties. She was blown over and then took part in the rescue work. Three weeks later she collapsed and was taken to hospital, where she had a rest for three months. After the bombing incident her weight increased from 19 to 20 st. (120.6 to 127 kg.). She was given stilboestrol injections and had a very scanty cyclical bleeding. Her emotional tone returned and she began to grieve for her daughter and reproach herself. She had to give up work after a few months and was investigated for a possible pituitary lesion at Guy's Hospital, but the findings were negative. Two years ago she began to receive regular injections of "neptal" and lost weight rapidly. With regular injections for two years her weight went down to 13 st. (82.5 kg.); but the effect diminished, and before admission to hospital she went up to 14 st. 8 lb. (92.5 kg.). She remained tense, felt confused and exhausted, and had not worked for over a year. There was an absence of libido.

On physical examination her weight was 14 st. 8 lb. and her obesity was of the simple type with normal feminine distribution. There were no signs of organic disease either in her endocrine or her cardiovascular system. The blood pressure was 140/80 and her urine contained no abnormal constituents.

On psychiatric examination she volunteered the information that her "inflated condition" depended on whether she was mentally relaxed or not, and said she was convinced that the mental illness caused the physical illness. She complained of a tight feeling in the head, but stated that she had taught herself to school and control herself, but it required a great effort. "I have often thought I require an emotional release."

She experienced considerable mental relief from a discussion of events and symptoms under sodium amytal narco-analysis. She was then abreacted under ether, the bombing incident supplying the starting-point of the abreaction. There was a violent emotional release as she re-enacted the scene, accompanied by piercing shrieks when she described the flying bomb coming down. An amnesia for events connected with the incident was uncovered, and she revealed the conflict at that time between her duty and her own and her child's safety—she could not decide whether to run for shelter when she heard the bomb. The day following the abreaction she said she felt entirely different; her mind felt clear, and she decided to resign from the police force in order to be "more feminine" to her remaining child. She also resumed her music-playing (she had not played at all since the start of her illness). The ether abreaction

was repeated twice, with further release of affect. When she left the hospital her weight had fallen to 13 st. without any dietary restriction, and she resumed her previous occupation of teaching music. A fortnight later she had a menstrual period which lasted three days, and she described this as the most normal she had had for four years.

This case of sudden onset of gross obesity with water retention and amenorrhoea, following a clear-cut psychological trauma and exacerbated by a second, illustrates the benefit that can be obtained by an abreaction of the precipitating events.

Case 2

A woman aged 30 complained in 1948 that she was very worried by her rapid increase in weight from 10 to 15 st. (63.5 to 95.3 kg.). This took place over a period of some months five years previously and followed the shock of the sudden death of her mother. There have been only minor fluctuations in weight since then.

At the first interview she stated that her father was a nervous, lonely, sanctimonious man who had had a nervous breakdown in the 1914-18 war. She was afraid of him because of his very violent temper and frequent quarrels with his wife. She was extremely fond of her mother, a hard-working woman who suffered from migraine and died from a cerebral haemorrhage at the age of 48. There is one brother, a medical student. The patient was a nervous child, a nail-biter, with fears of the dark. She had a normal schooling, mixed well, and did secretarial work before her marriage. Her characteristics are described as knowing her faults and liking to be the centre of interest. She married at the age of 21, and has daughters aged 7 and 2 and a son of 5. She claimed that the marriage was a happy one, although she had not experienced any sexual satisfaction and her husband frustrated her by the methods he adopted. Her health was good, but she had operations for uterine prolapse in 1946 and 1947.

In October, 1943, she was in a nursing-home awaiting tonsillectomy and was visited by her mother. The next day she was told of her mother's sudden death. "I always remember the shock. I could not believe it. I am always thinking of her. Even now I imagine I see mother." From this time she put on weight rapidly, was unable to reduce effectively despite numerous therapies, and felt very sensitive about her figure. She denied that she ate excessively, and alleged that dieting did not help her. She admitted that she had had a large appetite in the past. She also developed a troublesome itching rash on the inside of her legs and a pruritus ani which disturbed her sleep.

On physical examination her weight was 15 st. and her obesity was of the simple type, the chief excess of fat being on the buttocks (upper part) and on the abdomen. Her skin was soft and her body hair scanty. Her blood pressure was 160/100, and her urine contained no abnormal constituents. There was no evidence of any endocrine disorder. Her dietetic history showed that at this time she was taking a diet of approximately 2,500 calories, with an excess of carbohydrate.

On psychiatric examination she was tense and anxious. She felt lonely, frustrated, and tired, and experienced bad dreams in which she generally harmed her children. She complained that she screamed at the children and "could kill them." She was treated by sedation and a weekly series of ether abreactions which are set down here in some detail.

In the first treatment she described her aggressive feelings towards her second child (the obesity began eight months after this child's birth). The main emotional release, however, was over her mother, in whom, at this stage, she stated she had always confided. In the second abreaction the patient exhibited a good deal of rage when discussing her husband. He calls her "Tiny" and irritates her with his lack of understanding and complacency. She wished she were back to her schooldays, when she was known as "Starving Russia." In the third abreaction, after going over old ground, she suddenly abreacted violently over her mother's death and screamed, "What do they do at a post-mortem? The wounds do not heal like ordinary operation wounds." She regretted not having her

mother cremated, and visualized her in a cold grave. The fourth abreaction was mainly over a comparison between her husband and her father, whom she hated, but this she denied as soon as she had expressed her loathing. She felt less tense after each treatment, and lost 10 lb. (4.5 kg.) in the 24 hours after the first, and had lost 1 st. (6.4 kg.) after four weeks without any attempt at dieting. She thought it was due largely to fluid loss. In the past, strict dieting had been a failure, and in any case she was unable to keep it up for any length of time. The irritating rash was ameliorating, and "although far more preoccupied with thoughts was also far more able to deal with them."

She began dreaming about her mother, and the fifth abreaction ranged over this and the post-mortem examination. The next abreaction was over an elderly spinster neighbour who had been dominating her for some time and referred to her as "my adopted daughter." She felt this woman had replaced her mother.

It is interesting to note that at this stage her attitude towards her mother was beginning to change. The ensuing abreactions were mainly concerned with her marital difficulties, guilt over recent masturbation, her ambivalent attitude towards her father and her husband, and general feelings of frustration and hostility.

From the eleventh abreaction she began to talk more freely about her mother, and at the fourteenth abreaction was showing resentment. She described her feeling of desolation and resentment when her mother suddenly left her in a boarding-school at the age of 7 and went abroad to her husband for two years. She also disclosed: "I was never allowed to have an opinion of my own." Her mother did not approve of her marriage and "bred deceit"—"sex was taboo, and I had to do everything underground." By the fourteenth abreaction she had lost 2 st. (12.7 kg.) in weight and was showing an appraisal of the situation regarding her mother. She was gradually freeing herself from the mother's dominating influence, and at the present time is continuing treatment.

Case 2 illustrates the unsatisfactory mother-child relationship often found in obese subjects. The trauma of the sudden breaking of this tie was sufficient to start off gross increase in weight. After a series of abreactions she was not only improved from the psychological standpoint but had lost 2 st. in weight without any other form of treatment.

Case 3

A woman aged 48 was first seen in March, 1946, when she complained principally of obesity, "blackouts," headaches, fits of depression, swollen ankles, and insomnia. She stated that her weight went up from 11 to 16 st. (69.8 to 101.6 kg.) after the birth of her last child in 1942. Her periods were regular up to 18 months ago, but she had had only three scanty ones in the past seven months.

Her father was a regular soldier and strict disciplinarian who would not allow her to answer back, and her mother is described as "very sweet." The patient, one of seven siblings, was brought up very strictly, knew nothing of sex or menstruation, and was ignorant on such matters at her marriage. She had an excellent school record and, apart from smallpox at the age of 5, had good health. After the death of her first husband, when she was 26, she trained as a mannequin because she loved clothes, and did exceptionally well as a freelance for several years, but in 1932 her second husband compelled her to give it up. He bought her two tobacconist shops, which she managed successfully till 1939. The business failed early in the war and she became an ambulance nurse, but since her last confinement she has worked as a housing officer and Civil Service clerk. When well she is said to be full of confidence, energetic, hard-working, capable, a good mixer, over-conscientious, meticulous, fastidiously clean, and gay with a strong libido.

Her first marriage, at 17, was a happy one and lasted nine years, when her husband died from pneumonia. There are three children of this marriage. The second marriage, five years later (1932), was a ghastly failure, and ended with the

husband's suicide in 1937. He was an aggressive psychopath, terribly jealous and possessive, and constantly threatened to murder her and commit suicide. He insisted on perverted sexual relations with her, drank heavily, beat her, and on several occasions tried to gas her. She had a depressive spell with "blackouts" and loss of weight for some months after his death, but soon recovered her old interests and married a third time in 1939.

The history of obesity dates from her confinement in 1942. She had toxæmia during pregnancy and underwent a prolonged induction of labour, during which she became very frightened and was convinced she was dying. In the puerperium she developed pneumonia and femoral thrombosis followed by emboli in the lungs and right kidney. At this time the hospital was bombed; windows were blown in around her, and she was carried into the corridor. She was a semi-invalid for 18 months after leaving hospital, gained 2 st. (12.7 kg.) in weight during the first year and steadily after, despite constant anxiety and numerous traumatic incidents occurring throughout the war. Her son was reported killed at Arnhem in 1944, but she later learned that he had become a prisoner of war and that he had advanced tuberculosis. Another son was torpedoed three times and is badly disabled, and she had to help support both sons. Her home was blasted four times. She also underwent numerous stress incidents while on ambulance duty during the raids and in the flying-bomb periods, but she continued to work most of the time. Two years ago, soon after the return of her glider-pilot son, she became worried, was afraid to be alone at night, felt that her husband was turning against her, and became depressed. She could not concentrate; she became forgetful, and complained of occipital headaches, dyspnoea on exertion, sleep-walking, frequency, and "blackouts" about once a fortnight. She also had transient unreality symptoms—"a blankness of mind and a feeling of walking on water."

On examination the obesity was simple in type and was most pronounced on the buttocks. The cardiovascular system and C.N.S. were normal. Her blood pressure was 120/70. Urine: n.a.d. She was very tense, anxious, depressed, and hypochondriacal. She had previously reduced from 16 st. to 14 st. 9 lb. (93 kg.) by diet, but on admission weighed 15 st. 1½ lb. (96 kg.). She was taking a well-balanced diet of approximately 2,000 calories.

An intravenous sodium amytal narco-analysis was concerned with many distressing experiences, particularly in air-raids: in one flying-bomb incident she felt sure her young baby was killed. After the investigation she tended to dissociate. Some days later she abreacted under ether, and there was a violent emotional release with screaming and weeping. She had some amnesia for the flying-bomb incident, but knew she threw her baby under a falling chimney when she saw a bomb coming towards her. She wept freely after the abreaction and dissociated for about 15 minutes. She then asserted, "I feel a load off my mind," but was unable to explain this.

She remained in a tense state, and a week later again abreacted violently under ether. There was a most intense release of emotion when she described an attempted rape by her psychopathic second husband. He tore off her clothes and slashed her with a razor, demanding a child which she refused to give him. "He tore my inside out." The next day he threw himself under a tube train and she identified his mangled body. She confessed to feeling guilt and responsibility since then, as she had threatened, and wanted, to kill him. During the abreaction she showed great rage and desire to kill him, and finally dissociated. Later she continually returned for reassurance that she was not responsible for his death and wept freely.

A week later, under ether, she was again violent with fear, horror, and rage directed against her former husband. "I'll kill you," and "Go and kill yourself," were phrases frequently expressed. She reiterated that her former husband was a beast, wept, and dissociated.

Some days later, when interviewed, she said she could now talk about her former husband without feeling guilt. She also played the piano and sang, which she had not done for many years, and no longer felt that life was not worth living.

Menstrual flooding occurred after six months' amenorrhoea, and it is of interest that she had a flooding lasting six weeks after her second husband's attack on her, and she linked this similarity with the severe abreaction over her husband.

As some tension persisted she was again abreacted a week later. This was even more violent than the others; she reached an extreme pitch of excitement to the point of exhaustion, and showed little tendency to dissociate after coming round. She wept for some time and described her husband's behaviour in much greater detail. For the first time she returned to the ward without assistance.

She was now much improved and no longer worried about her second husband, but soon after became preoccupied with the flying-bomb incident previously mentioned. It was decided to attempt to clarify that situation by further abreaction. She described working in her office one afternoon when a flying-bomb swished past the windows, which were then blown in, and a filing-cabinet fell on her. When she arrived home she heard the sirens again and rushed out to reach her baby playing in the garden. A flying-bomb came down, and she held her child against the wall of a shelter. The bomb hit a near-by factory and she could see a chimney-pot coming straight at her. She threw the child into the shelter and fell, and as she did so she believed the chimney had hit and killed the child. She lost the use of her limbs and "blackened out" momentarily, then heard the child cry and crawled to him. Immediately after this episode she became very hysterical and attacked her husband for not having been present. At this stage of her treatment she had lost 11 lb. (5 kg.) in weight without dieting, and, although much better, she remained mildly tense and preoccupied with the bombing incident and was abreacted a sixth time. Further details were clarified with good effect, and there was a marked easing of symptoms. She ceased to blame herself, was able to travel in a tube train for the first time since her husband's suicide in 1937, stopped sleep-walking, regained her former confidence, and continued to lose weight each week.

Case 3 is of special interest in that the patient failed to gain weight after numerous traumatic incidents connected with her psychopathic second husband: she actually lost weight after his terrible and sudden death—a circumstance that can reasonably be attributed to relief and loss of tension. The psychological trauma that actually led to a rapid increase in weight was the bombing of the hospital in which she was a patient suffering from pneumonia during the puerperium. The abreactions in her case did not centre round the actual precipitating trauma, as it was found that sufficient affect was released by the incidents she brought up spontaneously whilst under treatment.

Discussion

Psychosomatic studies of simple obesity (Weiss and English, 1943; Dunbar, 1943) suggest that it is an "organ neurosis," its manifestation depending on constitutional factors and pre-existing fears. Fenichel (1945) in a psycho-analytical approach to the subject also regards obesity as an organ neurosis. He stresses the basic importance of exhibitionistic and pre-oedipal mother conflicts. "Oral gratification" is emphasized by many authors: the individual remains emotionally immature and overeats from early childhood. Psychological investigators into obesity in childhood emphasize the factors of lack of parental love with prolonged over-protection of the child (Bruch, 1940; Bronstein *et al.*, 1942; Gastineau and Rynearson, 1947). As Bruch points out, the child may go in for the pleasures of food if it does not get the pleasure of love from its parents.

When an individual becomes obese for the first time in early adult life, oral gratification, as a result of latent conditioning, may again allay anxiety or conflicts. Schopbach and Matthews (1945) found that most of their cases had

emotional problems and tension which produced an urge to eat, and if the urge was not satisfied the tension would mount. Freed (1947), in a study of 500 obese patients, also found strong evidence that anything which increased emotional tone increased the appetite for food. Personality studies have been carried out by various workers (Rennie, 1940; Nicholson, 1946), and include patients who fail to respond to a dietetic regime. The practical result of such studies is the conviction that a psychotherapeutic approach is a useful treatment in these cases, and attempts have been made to resolve or ameliorate factors contributing to neurotic breakdown, such as family relations, environment, social and sexual maladjustments, prolonged tension, and insecurity.

There is little mention in the literature of the influence of severe emotional stimulation in the rapid production of obesity. Bruch (1940) quotes Lichtwitz (1923) as observing during and after the 1914-18 war rapidly developing obesity in women who had been under severe mental stress. Lützenkirchen (1924) described the case of a woman of 29 who developed adiposity, diabetes insipidus, genital atrophy, and amenorrhoea after serious psychic traumata of long duration. The condition was thought to be organic, but some success was achieved in treating the case along psychological lines alone. Hochman (1938) illustrated the relation between severe emotional stress, such as the shock of the death of a parent or a financial reverse, and over-eating in six cases. Greene (1946) has recorded a fascinating example in which emotional stress led to obesity, and an improvement in the patient's circumstances was followed by a reduction in her weight without any other form of treatment, although she abandoned her diet. Gilbert-Dreyfus (1948) published a survey of a large series of cases suffering from "paradoxical obesity" as a result of bombing, prisoner-of-war, or concentration-camp experiences, the increase in weight usually taking place over some weeks. The incidence was almost exclusively in women, and the trunk and abdomen were the sites mainly affected. There was considered to be evidence of water-salt retention, and a few abbreviated case records and an outline of treatment were reported.

Our cases fall into a special category in that severe traumatic incidents seem to form the direct precipitant of sudden and marked simple obesity. The connexion between the obesity and this psychological trauma in time decided us to make use of abreactive techniques, the primary object of which is to relieve anxiety, tension, and aggression. The value of emotional release in "traumatic" anxiety states by excitatory abreaction and the technique employed under ether has been described in previous papers (Sargant and Shorvon, 1945; Shorvon and Sargant, 1947). The patient relives and re-experiences the original trauma, and, if the abreactions are successful, traumatic incidents tend to lose their emotional significance and thus cease to worry the patient. Though preferable, it is not necessarily essential to abreact the specific incident or range all over the traumatic incidents, and in practice we find that even an abreaction of a non-specific kind may produce symptomatic improvement providing the emotional release is of sufficient intensity. We have applied the technique of ether abreaction to many obese patients of the kind under discussion, and this will form the subject of another paper, but the cases quoted above are examples of the method and results. There is a symptomatic improvement with pronounced easing of anxiety and loss of weight of from 1 to 2 st. (6.35 to 12.7 kg.). The method has the advantage of being quicker and more practicable than prolonged psychotherapy, and certainly requires fewer interviews.

Some psychotherapy, however, is essential, as the implantation of new ideas and reintegration of the abreacted patient are very important. There is reason to believe that patients treated in this manner are then more likely to be able to observe a strict diet if this is considered necessary, and drugs such as "dexedrine" (dextro-amphetamine) may be better tolerated.

A brief analysis of the clinical findings and case histories of 12 women suffering from this syndrome is of interest. Anxiety, tension, giddiness, aggression, irritability, and depression are symptoms common to all, and many show hysterical features, such as "blackouts" and "fainting turns." The majority had stern aggressive fathers and over-indulgent, over-protective, kindly but "cold" mothers, and they were brought up in a strict fashion. All assert that before marriage they were almost completely ignorant of sexual matters. A good example is the patient who developed an anxiety state at the age of 23 after she had been kissed, as she believed pregnancy took place via the mouth. It is therefore hardly surprising that among an emotionally immature group of this kind many experience little or no satisfaction in their sexual relationship, and maladjusted marriages are common. The death of a mother, an undesired pregnancy, or the near-miss of a bomb explosion were the most frequent immediately preceding psychic trauma. Menstrual disturbances following the trauma occurred in some. One young woman still has a persistent amenorrhoea, although the precipitating incident occurred five years ago, but it is more common for patients to experience a temporary amenorrhoea of some months' duration.

In a personality assessment of this series we find certain traits common to practically all—namely, immaturity, impulsiveness, lability, and a poorly organized emotional life. They present a hysterical picture with a tendency to refuse to accept their inner urges or to express them in a satisfactory manner. Further personality studies, however, on control groups showing loss in weight are necessary if one is to get a clearer view why some patients put on weight rapidly under severe stress, whereas the majority appear to lose weight under similar circumstances.

Summary

The association between the sudden onset of simple obesity and severe psychiatric trauma is illustrated by three case histories taken from a larger series of cases.

A fairly uniform personality pattern in these cases is described.

The results of abreactive techniques in treatment are discussed, and it is suggested that they may provide a useful adjuvant or preliminary to the accepted forms of dietetic treatment in certain selected cases of obesity.

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Pain in the Upper Limb

Two questions to be answered are: (1) What structures may produce this interference and so cause this pain? and (2) Why are these painful conditions relatively common in the upper limb and uncommon or absent altogether in the lower limb?—because we now have definite evidence that sciatica, which of course is common enough, is not due to any lesion at the pelvic outlet but to a radiculitis that is usually the result of an intervertebral disk lesion.

Dealing with the second of these questions first, I suggest that it is man's upright posture combined with the great use of the forelimb when erect which causes the pain in the arm and accounts for its absence in the leg. As the erect position is assumed there is an angulation of the structures leaving the superior aperture of the thorax, so that they are readily stretched across any abnormal or at times even normal structure that may here form the boundary of the opening, whereas in the case of the lower limb the upright position undoes or opens out any such angulation of the neurovascular elements which enter the limb from the pelvis (Figs. 1 and 2).

Character of the Pain

Neural Pain.—This is usually of a tingling or stabbing character and of ulnar distribution. It is due to the lowest trunk of the brachial plexus being stretched over and/or compressed against (a) a cervical rib, (b) a fibrous band corresponding to a rib (Fig. 3), (c) the medial tendinous lower fibres of the scalenus medius (those arising from the seventh cervical transverse process), or (d) occasionally an abnormal scalene muscle (pleuralis of Sibson, intermedius of Testut, minimus of Albinus) lying between the artery and the nerve trunk.

The Scalenus Syndrome.—The part played by the scalenus anticus has been exaggerated, and simple division of this muscle may fail to relieve symptoms. The syndrome should be called the scalenus syndrome and not the scalenus anticus syndrome, as so frequently the scalenus medius (also the scalenus minimus less often) plays a part in its production. At operation it is essential to free the lowest trunk of the plexus from the rib, band, or tendinous scalene fibres over which it may be stretched. A frequent finding in these cases is an abnormal origin of the posterior scapular artery from the third part of the subclavian. The artery passes between the trunks of the plexus and tends to hold down the lowest trunk against the structure over which it is stretched (Fig. 4).

Vascular Pain.—This is usually of a dull aching character, and is due to a relative ischaemia brought about by compression of the subclavian artery (the costoclavicular syndrome).

The Costoclavicular Syndrome.—Interference with the blood flow in the subclavian artery at the

FIG. 3.—Showing the relationship of the lowest trunk of the brachial plexus to the lower medial tendinous fibres of the scalenus medius.

FIG. 4.—The medial tendinous fibres of the scalenus medius are shown and the abnormal posterior scapular artery arising from the third part of the subclavian and passing outwards and backwards between the trunks of the plexus so as to hold the lowest trunk against the subclavian artery.

UPPER-LIMB PAIN DUE TO LESIONS OF THE THORACIC OUTLET*

THE SCALENUS SYNDROME, CERVICAL RIB, AND COSTOCLAVICULAR COMPRESSION

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Cunningham calls the upper opening of the thorax the inlet, the lower opening the outlet. It is assumed that we are referring to the upper opening, for there can be few if any lesions of the lower one which produce pain in the arm.

The Upper Opening of the Thorax.—The superior aperture of the thorax is a narrow opening which is bounded by the first dorsal vertebra, the first pair of costal arches,

FIG. 1

FIG. 2

FIG. 1.—With the four limbs on the ground the nerve trunks of the limb plexuses enter the limbs approximately perpendicular to their origin and are neither acutely angled nor stretched.

FIG. 2.—With the assumption of the upright position the lowest of the nerve trunks of the forelimb plexus which leaves the thorax is angled acutely. The nerves to the lower limb pass almost vertically downwards and there is no tendency to angulation.

and the manubrium sterni. From it issue the great vessels and nerves to the upper limb, and interference with them at their egress by certain structures may cause pain of two kinds: that of neuralgia or neuritis, or that of ischaemia.

*Read in opening a discussion in the Section of Orthopaedics at the Annual Meeting of the British Medical Association, Harrogate, 1949.