vomited copiously, and the temperature rose to 104°, pulse 168, respirations 58. This marked the onset of a serious relapse. By the following day there were signs of complete consolidation again at the left base, and numerous moist sounds were present in both lungs. The temperature continued at 101°, pulse 140 to 160, respirations 40 to 50. On March 27th, the third day of this relapse, there being no improvement, the child was returned to the oxygen tent. As before, an immediate effect was obtained. The temperature was normal in twenty-four hours with a corresponding drop in the pulse and respirations. As on the first occasion, there was a rapid clearing of the moist sounds in the chest. The tenant himself was quickly "at home" again in the tent, and manifestly improved. The spasms of coughing continued as before, unaccompanied by whooping or vomiting.

After a second spell of ten days in the tent the consolidation at the left base had resolved, and on April 6th the use of the tent was finally discontinued. As the chart shows, this was followed by a slight reaction, the child running an evening temperature of 99°, with some increase in the respirations for the next week. The spasms of coughing, although no more frequent, became more severe, being accompanied by a whoop and sometimes by vomiting, but they quickly subsided, and after a fortnight had dropped from an average of eight to twelve to some three to five daily. Coarse crepitations persisted at the base of the right lung for a month after leaving the tent. Convalescence thereafter was straightforward. Whooping ceased on May 23rd, and the child was finally discharged on June 5th without symptoms or residual physical signs in the lungs.

Commentary

The above case, we suggest, illustrates in no uncertain manner the value of the oxygen tent in whooping-cough bronchopneumonia, and no other therapeutic measure in our experience has produced a comparable effect in a case of this apparent severity. That the result was due to the oxygen tent can hardly be doubted; but having a fair experience of this condition and the many unexpected results, disappointing or favourable, which are to be encountered, we are unwilling to presume that similar benefit will be obtained in all cases. A case of whooping-cough in such a young child imposes a severe test on the practicability of the method, and serious nursing difficulties might have been anticipated. Such as did arise were successfully surmounted, and at no time did the child show the least discomfort or intolerance of the apparatus. During the first spell in the tent the child was removed at four-hourly intervals for treatment, and in addition, when spasms of coughing were severe, the nurse had to open the tent at times to support the child. Despite this an oxygen tension of 30 to 40 per cent. was maintained, and in the second period, when the tent only required to be opened at four-hourly intervals, a percentage of 40 to 50 was easily kept up.

The effect of the oxygen on the spasms is also of some interest. As long as the patient was in the tent whooping and vomiting did not occur and the spasms tended to diminish in frequency, whereas on both occasions when he was removed from the tent whooping and vomiting immediately recurred, with a slight increase in the frequency of the spasms.

We wish to take this opportunity of thanking Dr. E. P. Poulton for kindly granting us the loan of the tent and instructing the nursing staff in its use.

The first number has appeared of *Speech*, the quarterly journal of the British Society of Speech Therapists. The publishers are Sir Isaac Pitman and Sons Ltd., Parker Street, W.C.2, and the price is 2s. 6d. While it is the wish of the society to include in its journal technical articles on speech defects and disorders by members of the medical profession, psychologists, physicists, and other specialists, it will also publish papers of a more simple nature likely to be of interest to teachers and parents.

COMMENTS UPON A CASE OF "PERIVENTRICULAR EPILEPSY"

BY

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I have to thank numerous unnamed friends for providing me with the clinical data for this dissertation. My task has been rather of the nature of a retrospective adjustment of parts of a puzzle in order to make a composite whole.

I wish to preface the account of this case with a few observations on the terminological inconsistencies which one encounters in the literature on epilepsy.

Terminology

The term "epilepsy" has two distinct usages. It may indicate a disease of unknown origin, or it may merely describe a syndrome. In the former instance, the term is the equivalent of what is known as idiopathic, true or essential epilepsy. In the latter, the significance is wider, and embraces all conditions whose outward manifestations are similar to or even identical with those encountered in the genuine malady. The former is an explanatory term, even although no explanation of the symptoms is known: the latter is a descriptive epithet. The first-mentioned usage is current in popular speech and is also met with in medical literature, but the scientifically minded neurologist who approaches the study of these states from the point of view of the physiologist prefers to confine the connotation of the term to the syndrome itself. He therefore speaks of epilepsy produced, let us say, by encephalitis or by heart-block, by cerebral cysticercosis, insulin hypoglycaemia, and so on. In general medicine this habit is not prevalent. One speaks rather of symptomatic epilepsy only until the cause is ascertained; and if and when it is, one ceases to call the syndrome epileptic at all, preferring rather to describe the state by the name of the pathological condition which has given rise to the convulsions.

Is it sacrilegious, I wonder, to suggest that the term "epileptiform" should be freed from its traditional usage as synonymous with Jacksonian epilepsy and employed in the sense of "not necessarily of idiopathic variety"? Admittedly much of the prevalent confusion is due to the fact that it is so frequently used in that sense. If the suggestion is not acceptable, perhaps some synonym for "symptomatic epilepsy" could be found. The term "epileptoid" has too narrow a significance.

To illustrate the contradictory senses in which the word epilepsy is employed, I may quote from an address on "Fits and Faints" by Dr. G. A. Sutherland.¹

"A difficulty often arises in the diagnosis of an attack of sudden loss of consciousness as to whether it was primarily cerebral, that is to say, of an epileptic nature, or primarily circulatory, that is to say, a faint or fainting attack."

This author would apparently exclude from the epileptic category an attack occasioned by a circulatory disturbance; but not so the aforesaid schematically minded neurologist, whose choice of nomenclature is unaffected by the aetiology of the syndrome. Such terminological misunderstanding has to some extent been mitigated by the use of the plural term. In order to stress the clinical polymorphism of epileptic phenomena, Kinnier Wilson prefers to speak of "the epilepsies." Advantageous as this is for schematic purposes, the age-long associations of the word still abide.

Amongst other "epilepsies," Kinnier Wilson has distinguished a special group characterized by the localization of the disorder in neurosympathetic centres to the relative exclusion of sensorimotor phenomena of somatic type. This group he has styled "periventricular epilepsy."² The fits are infracortical, and symptoms of an affective and visceromotor kind predominate. Included in this category are the well-known vasovagal attacks. In addition to the classical features of this syndrome a persistent low body temperature and the occurrence of uncinat auras (for example, an unpleasant taste accompanied by a strong sense of familiarity) are described.

These features occurred in the case about to be described, though the uncinate aura was noticeable only in the earlier stages.

Where facts allow of alternative hypotheses, much dialectical ingenuity can be exercised in arguing the case for different aetiologies. Are the symptoms necessarily indicative of some definite lesion or is there merely a physiological disturbance functionally conditioned? Is the origin of this disturbance central—that is, cerebral—or is it peripheral? Are the psychological features to be ascribed to the presence of such lesion or derangement, or might they even constitute the *fons et origo* of the whole syndrome?

In the following pages I have attempted to give an account of the malady as accurately as possible from both the objective and subjective points of view, and have essayed to correlate these findings. The psychological aspects of the case have also received attention.

Previous History of Patient

The patient is a medical man, 45 years of age, married, with four young healthy children.

Family history throws no light on present illness. No mental, epileptic, or "nervous" history. Father died, aged 67, of prostatic carcinoma, mother aged 80 of cerebral haemorrhage. Elder brother, who suffered a good deal in his youth from asthma, and an elder sister, both healthy.

PERSONAL HISTORY

Scarlet fever in childhood. Operation for suppurating appendix when aged 18, and a subsequent operation for removal of adhesions two years later. War service as regimental M.O., 1914–18. Severely wounded March, 1918. The head wound was not serious, the bullet merely grooving the skull in its swift passage through the helmet, but the wound of the right hip proved serious, the bullet having penetrated and fractured the acetabulum. The condition was undiagnosed for four months, during which time the constant raising in bed drove the femur head through the shattered acetabulum, thus causing an eventual shortening and adduction of the limb. The sepsis had been aggravated by the leaving of two rubber drainage tubes in the wound. When the presence of these was later recognized by *x* rays the suspicion of there being two tubes did not arise, so one only was removed, until a further examination revealed the presence of the other, and by this time a thorough curetting of the femur neck had to be carried out. The ankylosis of the femur head with a fragile neck beneath it portended danger in the event of a fall, and this occurred a year after the wound had healed, and resulted in a fracture of the femur neck. A satisfactory fibrous union was obtained, there being no recurrence of any discharge from the wound.

I have thought it better to state these particulars in detail, not that there would seem to be any connexion between the wound infection and the illness which began eleven years later, though it is interesting to note that an accidental fall in 1927 brought about a transitory rigor and pyrexia.

Present Illness

One Sunday morning in November, 1932, the patient was sitting with a doctor friend with whom a few moments earlier he had been examining a case of general paralysis. His friend had made some observation, and, hearing no comment on it, looked across to find our patient extremely pale and apparently unconscious. His jaw was moving slowly up and down, and while still apparently unconscious, he remarked, "That was a nasty taste." A moment later the telephone bell rang, which sufficed to make him respond automatically. The inquiry was about the very case they had been discussing. Our patient's consciousness was not sufficiently restored to enable him to answer without first inquiring particulars of his friend.

One would have thought that he would feel some anxiety on being told of his attack, especially as he could not fail to be aware of its possible significance, but he made light of it and apparently never gave it a thought. He tells me now that he is surprised at this, and can only account for such an attitude by an unconscious refusal to

face the facts of what might prove a serious situation—in other words, by a repression. Such repression can, I suppose, occur in response to some sudden organic mischief as to a psychological situation.

This first attack is the only one which is not known to have been preceded by similar attacks during sleep, but it may well have been so—the nocturnal attacks having passed unobserved. Since that date, attacks have occurred at approximately three-weekly intervals. The series commences during sleep, an attack occurring each hour, three or four nocturnal attacks in all being the usual number. During the first two years of the illness the attacks continued after waking, say a further three or four; but latterly the diurnal ones have not occurred, and the nocturnal ones have become less pronounced in character.

The nocturnal attacks begin as a rule about 3 or 4 a.m. The patient is a sound sleeper, but his wife is awakened by the sound of deep expirations, accompanied by sounds of swallowing and by movements of the jaw. The pulse is weak. Then the breathing becomes quiet, face pallid and damp with perspiration. Gradually, in a minute or two, breathing, pulse, and colour become normal, and sleep consciousness is restored. The order of events may vary. On one occasion jaw movements indicated the commencement of the attack, and these were followed by deep respirations, then sucking movements, pallor next, and finally feebleness of the pulse. In one attack it was noticed that though the pulses at the wrists were very weak, both temporal arteries were pulsating strongly. On several occasions there was polyuria later when the patient woke up. There never has been any vomiting or sphincter relaxation.

It is only on these days that further attacks have occurred in the waking state. These have their own characteristics. The patient is aware of an impending loss of consciousness which he cannot avert. Once or twice a vague sense of reminiscence, as of the war, has accompanied this. The next thing he is aware of is his return to consciousness. In the meantime there has been pallor, weakness of the pulse, and on most occasions movement of the jaw and lips.

The loss of consciousness in many instances was not absolute and may never have been so. Rather it was a state of altered consciousness like a trance. On one occasion the patient said, "This is extraordinary, but I shall be all right in a minute." He had no recollection of this. He has carried out automatic actions with precision or has remained standing, or if sitting has continued to hold his book or pen in his hand until full consciousness was restored. He has never fallen. Never has there been any complaint of headache.

An attack just a year after the commencement of his illness is described by a nurse in the hospital where the patient had gone for investigation, as follows:

"Patient was apprehensive, and said he thought he might have an attack. Immediately there followed heavy expiration through the mouth, and sucking of the cheeks and lips—patient apparently unconscious. The chin then moved up and down four or five times. Then the patient said, 'It is all right. I'm not going to have an attack,' and appeared very apprehensive. Pulse 100. Pallor became marked. Pulse dropped to 80. Breathing natural. Unconsciousness lasted another three or four minutes, but the patient talked a certain amount during the attack."

An attack which occurred during sleep a year after the one which has just been described is worthy of mention, inasmuch as during it the eyes were open and were seen to be moving slowly from side to side.

Heightening of the olfactory sense has been in evidence from time to time on the mornings of the attacks. The patient has remarked on the pungency of the odour of coffee, etc., at breakfast time. There was nothing hallucinatory in these perceptions.

Clinical Findings

Patient is of sturdy build, robust, but incapacitated to some extent by his lameness. Height: 5 feet 6 inches. Weight: 11 st. 6 lb. Temperature consistently subnormal, 96°. Central nervous system: no evidence of any

lesion. Radiograms of skull and brain negative; optic disks and visual fields normal. Cerebro-spinal fluid: negative Wassermann; Lange curve 0001111000. Circulatory system: blood pressure normal; heart sound in every respect; electrocardiogram—"nothing of significance." Alimentary system: nothing to note. X-rays showed no gall-stones. Blood picture normal, and blood Wassermann negative. Urine normal in the intervening weeks, but just prior to attacks showed presence of sugar and a trace of acetone.

In view of these findings it was thought best to search for a septic focus. The antra and sinuses were healthy, but the tonsils obviously diseased. These were removed six months after the commencement of the illness, and in one tonsil there was an abscess containing about a teaspoonful of pus. The eradication of this sepsis did not bring about any change in the number or nature of the attacks: but it is interesting to note that since then the auras of taste and smell have disappeared. Perhaps these discernments were not hallucinatory, but actual perceptions due to the sinking-in of consciousness. The "nasty taste" may well have been of tonsillar origin, and an "odour of apples" once remarked on, the perception of acetone in the breath. At such times there has certainly been acuity of the senses.

Six months later—that is, a year from the commencement of the illness—a fuller investigation was made of the state of the blood sugar.

Two days previous to an attack the glucose tolerance test was: fasting 0.172, 1/2 hour 0.204, 1 hour 0.213, 1 1/2 hours 0.249. On the day of the attacks, half an hour after one of them, the blood sugar was 0.21, sugar in the urine + + +, acetone +. During three successive days midway between the attack groups the blood sugar percentages were normal. Blood sugar estimations were made during the next group of attacks, and are of interest. Immediately after an attack at 6 a.m. the blood sugar was 0.166 per cent., and immediately after the next attack at 7.40 a.m. the blood sugar percentage was 0.132. A few weeks later, on the afternoon of the day when attacks had occurred and ceased, the blood sugar was reduced by insulin (25 units) to 0.037 without producing loss of consciousness or convulsions, or, indeed, any noticeable effect, nor at this time was there any evidence of hyperadrenalaemia, but whether such had existed earlier in the day was not ascertained.

The examination of the cerebro-spinal fluid at this time gave the following results: protein increased, but not estimated; chlorides 0.702, sugar 0.06, urea 35 mg. per 100 c.cm.

Blood urea was 41 mg. per 100 c.cm., the blood cholesterol 143 mg. per 100 c.cm. Normal blood picture, and culture sterile.

The illness would seem to have reached its zenith about this date—a year from its commencement. Progress has been gradual since then. Urine samples have shown a progressive diminution in the amount of sugar, and eighteen months from the beginning the presence of sugar has not been detected. *Pari passu* with this improvement has been a greater clarity of consciousness. Formerly, the attacks left the patient clouded to a slight extent, amnesic with regard to recent happenings and with an air of self-absorption; but this state, similar to what is found in cases of mild toxicosis, gradually yielded to one of normality, the patient now being instantly alert after the attacks, the attacks themselves having diminished in severity and no pathological constituents being found in the urine.

Discussion

Whether there be an organic origin for this syndrome, or whether it had resulted from some physiological dysfunctioning, there was certainly a psychological situation existing either on its own accord or produced by the concomitant bodily disturbances. Whilst the patient exhibited no fear of the recurrence of his attacks nor even now had admitted having experienced such, fear was evident enough just as he was about to lose consciousness, and even during some of the attacks. Moreover, the reaction to the first attack of all was peculiar, inasmuch as he went about his business quite cheerfully as though there had

been nothing amiss. It is interesting to note that the recounting of an attack would sometimes induce one. This, of course, occurred only on the day when attacks had already taken place and the patient was therefore especially susceptible.

Anxiety of mind occasioned by the symptoms and the subsequent prostration tend to keep the patient in an unduly receptive state and prone to further attacks. Irrespective, therefore, of what the diagnosis might be, it was thought wise to do everything possible to lessen the psychological tension. This was apparently at its zenith about a year after the commencement, when the blood sugar was so high. Admittedly sugar metabolism is controlled and affected by metabolic centres in the hypothalamus, but it is a question whether these findings may not have been due, in part at any rate, to the state of emotional tension. The fact that the relaxation of this tension and sharper clarity of consciousness following the attacks have coincided with the diminution of the physical signs does not bring us any nearer the ultimate causation.

One may set aside idiopathic epilepsy—the age of the patient makes this unlikely; and the apprehensiveness during the attacks, their departure from the classical variety, and the blood sugar findings would seem to contradict such a hypothesis. As to the possible causes, these would seem to be: if organic, then central or peripheral. There is no evidence of any definite peripheral disturbance—for example, hepatic, suprarenal, or pancreatic disorder. Of central lesions, there was no clinical evidence of cerebral tumour, the likeliest lesion being either a patch of previous encephalitis in the neighbourhood of the floor of the third ventricle or some cicatricial process, the result of the head wound. As to the former, a history of previous encephalitis is non-existent, but that is no uncommon happening. As to the latter hypothesis, one would regard such hypothetical cicatricial process as the result of the skull wound fourteen years previously. That seems an unduly long interval. Indeed, one hesitates to accept a diagnosis of organic mischief in the brain.

The syndrome is similar to what has been described by Kinnier Wilson as "periventricular epilepsy," but we have shown that in this case the "uncinate aura" did not persist. Periventricular epilepsy is not idiopathic epilepsy, but from the view-point of the symptomatologist the syndrome is regarded as one of the many epileptic variants. Could the attacks be accounted for by a ketosis?

A temporary state of acidosis did in fact exist, but the attacks persisted after the blood sugar had become normal, and acetone had disappeared from the urine. The acidosis, indeed, may be regarded as one of the several symptoms, not as a cause.

Could the whole process have been initiated by tonsillar sepsis occurring in a subject especially susceptible to such infection as the result of sepsis from his wounds, and by a conditioned reflex have produced an anxiety state reminiscent of the actual incident of being wounded? This wound was received during the March retreat in 1918. Our patient then would be in a state of heightened emotional tension, and now it appears that, owing to the severity of the wound, he did at that time lose consciousness.

The reliving of such episodes in states of altered consciousness is not uncommon, but experience shows that a neurosis of this type has deeper roots than mere war experiences, no matter how terrifying. Suppose the condition to be a neurosis, could it be an anxiety neurosis in the Freudian sense, the *direct somatic* consequence of disturbed sexuality? As is well known, Freud has traced the origin of the three "actual neuroses"—neurasthenia, anxiety neurosis, and hypochondria—to disturbances of the sexual life of which they are the direct somatic consequences—that is to say, they have no psychological "meaning." He also reminds us that the symptom of the actual neurosis frequently becomes the nucleus of a psychoneurotic illness. Freud has modified his original hypothesis in some respects, but still apparently concedes the possibility of unexpended libido being directly transformed into anxiety; and if such a factor operated in this particular instance, one would presume that libido which had become unusable because of endocrinal alterations had

been converted into physical symptoms through the intermediary of the autonomic nervous system. The effect that was manifested was fear, and "in the biological depths of the psyche," as Kretschmer reminds us, "archaic phylogenetic anastomoses exist between sex, excitement, and fear."³

There are surprisingly few histories which do not afford the requisite data for the production of an actual neurosis, and yet no actual neurosis develops. Even although in this particular instance there had been sexual somatic disturbances, such would not explain the character and severity of the syndrome. Obviously it was outside the category of an anxiety neurosis, whether that was a component factor or no. Was it, then, of psychological genesis, the physiological expression of psychological repression? A psychological process can, of course, seize upon a symptom supplied by reality, and an actual neurosis can well become the nucleus of a psychoneurotic system.

If one were to assume a toxic origin for the symptoms, such would not preclude the operation of psychological factors. The toxicity apparently acts by lowering the threshold for such. There is, as it were, a psychological situation in solution, and by reason of infection or toxæmia it becomes crystallized out. That at any rate has been my experience with cases suffering from acute toxic confusion. Such cases are the outcome of some definite bodily illness.

In a case recently seen by me measles was the illness. The patient's temperature was 106°. She was restless and delirious. Psychological elements gradually shone through and ultimately dominated the situation. These eventually faded, Nature reasserting herself in conditions which promoted recovery, and their dispersal was helped by psychotherapeutic measures too. The psychological situation, however, would never have risen, it would have remained in a state of repression but for the severity of the toxic process which had instigated the whole affair.

Whether a similar mechanism was in operation here we cannot say. For practical purposes one may neglect the somatic side and concentrate upon the psychological.

If the syndrome be psychological its origin is in repressed affect, and the repression of such affect is the result of a deep self-estrangement. The unconscious conscience does not approve of what the conscious conscience would condone. The ego is afraid of the libido. There are elements unassimilable by consciousness. Such elements must be incorporated into consciousness. Only thus can the threat to consciousness be extinguished and the energy value of the complex be depleted. This short summary of the imagined psychological impasse does not conform strictly with the terminology of any one psychological school. It is, however, understandable. The ego's fear of the libido is a Freudian phrase. Freud does not avail himself of the concept of the complex. It is a word which does not fit into his schemata, but is none the less intelligible to us on that account. The localization of the trouble to the region of the hypothalamus is on this hypothesis to be explained by the fact that *there* is the mechanism whereby emotional tensions declare themselves.

It is true that toxins from extraneous sources can affect the body and bring about emotional disturbances. It is equally true that emotions can engender a toxæmia. Endocrinal derangements may also occasion or result from unexpended and unexpendable affect.

Dream Analysis

Dream analysis is associated in our minds with the investigation and treatment of psychoneurotic states. Not all the patients who are classed as neurotics do in fact suffer from neurosis. Many of them later prove to have had obscure organic diseases. Every physician can recall numerous instances. I remember a woman who was regarded as a typical hypochondriac, for ever complaining of pain in her back, turn out to be a case of carcinoma of the vertebrae, the presence of which was first suspected by the discovery of a xanthochromia in the cerebro-spinal fluid. The condition had not been revealed by *x* rays.

Psychotherapists encounter such cases and are sometimes able, from the psychological approach alone, to state definitely that they are not primarily psychological cases at all. There is an instance quoted by Freud of a patient sent to him for treatment whom he promptly sent away for further physical examination, and in whom an antral suppuration was discovered. I do not recollect that Freud has diagnosed organic maladies by dream analysis, but readers of Jung will recall instances of this. In *Modern Man in Search of a Soul* he records the case of a young woman sent to him as presumably a hysteric. The symbolism of her dreams, however, was interpreted by him as evidence of the presence of an organic malady, which later declared itself as progressive muscular atrophy.

No one can dispute the theoretical possibility of arriving at such a diagnosis by such means. In certain dreams it may be quite unnecessary to obtain the dreamer's associated thoughts. The symbolism may be of such a kind as to permit of immediate translation. Doubtless this cannot be achieved except on rare occasions and by the most practised exponents of dream interpretation, and one need not be surprised at an attitude of scepticism towards such claims. It has been suggested that the diagnosis of such cases by Jung is the outcome of his intuition. There are numerous instances of experienced physicians having arrived at their conclusions intuitively out of a vast wealth of clinical experience. Jung, however, seems to reach his conclusions solely by symbol interpretation.

In view of the obscurity of the aetiology of this case under discussion, it was thought unwise to neglect the opportunity of dream investigation. A dream of our patient in October, 1933, reads as follows:

"Someone beside me kept on asking me something about oiling some machinery. Milk was suggested as the best lubricant. Apparently I thought that oozy slime was preferable. Then a pond was drained, and amid the slime there were two extinct animals. One was a minute mastodon. I forgot what the other one was."

The symbolism here would seem to be evident enough, indicating the conflict between two opposing tendencies: on the one hand a spiritual orientation is suggested, the maternal principle being invoked, and on the other, an outlet in accordance with the needs of primitive sexuality. The drainage of the pond would seem to indicate the need for analytical self-criticism, the mastodon representing an extremely archaic vestige surviving in the unconscious, some early infantile fixation stultifying the harmonious development of the individual.

I thought it would be of interest to submit this dream to Jung to ask what his interpretation would be. He had no hesitation in saying that it indicated some organic disturbance, and that the illness was not primarily a psychological one, although there were numerous psychological derivatives in the dream. The drainage of the pond he interpreted as the damming-up of the cerebro-spinal fluid circulation.

That interpretation is of unique interest. The dream does indeed have a mechanistic colouring, as though it were saying that some physiological function were not working smoothly. It seems strange that the cerebro-spinal fluid should be symbolized as a pond, but here a sentence of Wilfred Trotter's comes to mind.

"It is interesting to reflect," he says, "that the source of this mysterious secretion which has given so much difficulty to the chemical physiologist may turn out to be no more abstruse a thing than nature's nearest approach in the animal body to a spring of plain water; if this should be so, it may also remind us of the small and amusing coincidence that one part at any rate of the tortuous channel through which the fluid runs—the aqueduct of Sylvius—has since the very early days of anatomy borne a singularly exact and appropriate name."

I will take the liberty of amplifying Jung's interpretation of the dream, and as preface to this will quote two observations, the first by Cushing on the pituitary gland.

"Here in this well-concealed spot," he says, "almost to be covered by a thumb-nail, lies the very mainspring of primitive existence—vegetative, emotional, and reproductive—on which, with more or less success, man, chiefly, has come to superimpose a cortex of inhibitions. The symptoms arising from disturbance of this ancestral apparatus are beginning to

stand out in their true significance. The diencephalon is an ancient part of the brain which remains essentially unaltered in all creatures that have a brain at all."

My second quotation is from Brain and Strauss⁵:

"Medical history can show few revolutions of thought more startling than the development of our knowledge of the functions of two small structures at the base of the brain, the hypothalamus and the pituitary gland. Hardly had physiologists become accustomed to regarding the pituitary as possessing a profound influence upon growth and metabolism than research began to attribute very similar activities to the neural centres in the floor of the third ventricle, and to cast doubt upon their attribution to the pituitary."

What did the dream say? "The pond was drained, and amid the slime were two extinct animals miniature in size. One was a minute mastodon. I forget what the other was." Why should we not say—the hypothalamus and the pituitary lying beneath the cerebro-spinal fluid pond? It is not difficult to interpret the meaning of slime—the colloidal secretion of the pituitary. According to Collin,⁶ the flow of that secretion is in several directions, towards the general circulation, to the tuber cinereum and into the cerebro-spinal fluid of the third ventricle. The latin word *pituita* means slime or mucus. Here, then, we have a striking parallel to the neurological hypothesis which would assume some derangement of the neural centres of the floor of the third ventricle. It is not overstressing the comparison to suggest some similitude between the corpora mammillaria and the nipple-like projections on the molar teeth which give the mastodon its name. Doubtless there would be some measure of pituitary dysfunction too. Hormonal disturbances have their counterpart in psychological commotions. In this case it would appear that the latter are derivative. Indeed, the two are often so inextricably interwoven that it is impossible to assign to them their respective responsibilities.

Conclusions

In the case outlined above it would appear that the "periventricular" attacks were incidents in a wider disease process, one of the toxic or infective-exhaustive group.

The cessation of the diurnal attacks, the amelioration of the nocturnal ones, and the restoration of the complete clarity of consciousness, together with general improvement of the bodily health, without resort to drugs, indicate this.

The locus of the disturbance is not in doubt—the sides and floor of the third ventricle, but its causation is still conjectural. A patch of old encephalitis has been suggested.

Dream interpretation here corroborates the neurological hypothesis in a striking manner. The psychological elements in the case would seem to be secondary to the toxic processes, but ought not on that account to be neglected. The acquisition of insight and the allaying of fears tend to hasten recovery.

Dreams also, it would seem, do not merely provide information of the psychological situation, but may disclose the presence of organic disturbance and even denote its precise location.

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In 1939 King's College Hospital will celebrate its hundredth birthday. It is over twenty years since King's moved from its original home in Portugal Street to Denmark Hill. A centenary committee has now been formed, under the chairmanship of Lord Hambleden, who has with him several other members of the Committee of Management, including Mr. V. E. Negus, representing the medical staff.

RAT-BITE FEVER

BY

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Relapsing fevers are not a common occurrence in general practice. Their incidence presents considerable difficulties of diagnosis, hard to resolve in the absence of a clear-cut history of definite infection. The usual causes of continued pyrexia, such as are found in this country, are limited unless the patient has lived abroad recently, or is in contact with sources of infection introduced from tropical climes.

In a review of the aetiology of recurrent fever, French¹ states that "of three special types of cases, rat-bite fever, blood diseases, and liver conditions, many cases of the former occur annually in Great Britain, but they are not all recognized." T. Hare² points out that only a few cases have been recorded in this country. Price³ mentions a case recorded by Horder. Of world-wide distribution, it appears that the disease is commonest in Japan, where it is known by the name "sodoku." India ranks nearest, and reports of cases come from France, Italy, Spain, East Africa, West Indies, and Australia. Five were diagnosed in one county in South Carolina during 1929. Ripley and Van Sant⁴ report two cases of rat-bite fever from the University of Chicago Department of Medicine occurring in medical students. Van der Bogert⁵ described a clinical case in a child of two and a half years old. Hare⁶ quotes Yamada's description of a case of relapsing fever after a cat scratch which proved to be due to the identical organism of rat-bite fever.

Aetiology

Infection is due to an organism named variously, but the *Spirochaeta morsus muris* is the most likely cause. The latter gains entry to the bitten tissues and later into the blood stream and lymph glands. The house rat is occasionally a carrier. Recent work suggests that the spirillum is that named *Spirillum minus* by Carter, but American workers favour the above-mentioned organism.

Symptomatology

Following a latent interval varying from two to six weeks, swelling, pain, and ulceration appear at the site of the original bite. Immediate application of antiseptics may not affect the issue. Local lymph glands enlarge and feel shotty on palpation. Lymphangitis emerges in the affected region. Rigors, general malaise and lassitude, headache, joint pains, backache, nausea, and vomiting are liable to occur. Muscle stiffness and tenderness may be found. Anorexia is marked and the bowels loose. A characteristic dusky-red rash appears, the spots measuring from 0.5 to 6 cm. in diameter, indurated, and losing their colour on deep pressure. The distribution is not limited to the neighbourhood of the bite. The face, thorax, and abdomen are affected equally with the extremities. Bouts of fever lasting several days are interspersed with intervals of freedom. Untreated, these recur over a period of months or years. Chronic ill-health may result, but is unlikely after adequate treatment. The mortality has decreased from 10.5 per cent. to a very small figure in Japan since the introduction of treatment by the organic arsenicals. Nephritis is recorded as a permanent complication, and encephalitic phenomena have been seen.

Treatment

Low and Fairley⁷ advise the injection of "one or two" doses of salvarsan or its derivatives. Commencing with 0.3 gram this may be given intravenously. Others state