that the rectal pain was in fact an epileptic aura. There were no abnormal neurological signs. She said that she did not feel faint from the pain itself, which was rarely severe, but she would become unaware of her surroundings for a few seconds or minutes. On recovering her senses there was no longer any pain. Her husband said that she looked pale and her eyes were open and staring during the attacks. She had never fallen, though she had been incontinent of urine in one attack. She had previously been subject to migraine but the epilepsy had never been recognized.

Preliminary Motor Phenomena

I will not refer to the strange and sometimes complex sensory auras which sometimes herald the onset of a fit, but I should like to mention some of the preliminary motor phenomena. It is well known that many epileptics are restless and irritable for some hours before an attack, and they can sometimes ward it off by keeping on the move. In some cases involuntary coughing is the first evidence of an attack, and I have already mentioned a woman whose major epileptic attacks were preceded by a series of coughing attacks, associated with sensations of *déjà vu* and sometimes panic. Another patient, a man aged 40, had had six attacks of suddenly falling unconscious. These attacks came without warning except that each was ushered in by a mild fit of coughing. It was impossible to reproduce an attack by making him cough violently or by compression of the vessels of his neck. Although the Valsalva experiment may cause fainting, there is no doubt that mild involuntary coughing attacks may be the first sign of the epileptic fit itself.

In other cases a fit may begin with spontaneous laughter. A boy aged 6 had occasional grand-mal attacks in the evening and petit-mal attacks during the daytime. The petit-mal attacks, which occurred up to three times daily, were associated with uncontrollable laughter. His mother said that he never used to laugh in this way and that he was quite unaware of his surroundings at the time. There is never any obvious cause for his laughter and he has no recollection afterwards of laughing.

Another epileptic patient, aged 20, often gives three or four piercing screams and runs several yards before falling unconscious. He says that he sometimes develops a frightening idea at these times, but is unaware of either screaming or running. Variants of this so-called cursive epilepsy consist of other sorts of automatic movement. Gowers described a patient whose fit began with his hopping round the room on one leg, and Kinnier Wilson referred to another who waved his right arm in circles before falling unconscious and convulsed. I have seen a man who often clasps his hands together three or four times before a major attack, and also a boy, subject to petit mal, who sometimes does a sort of tap-dance or automatically jumps vigorously up and down, quite unaware of his surroundings for a few seconds.

Some patients are liable to a vertiginous aura before a major attack, but on occasion the patient himself revolves. For instance, a man of 38 would often have warning of a major attack by a sudden brief sense of rotation, but on one occasion he was observed actually to rotate in space two or three times before falling to the ground unconscious. Similarly, a girl of 13, subject to major epileptic attacks for the past year, was seen to spin round before her last attack. Her mother wrote: "My daughter spun round like a top spinning, with eyes open, turned upwards—then fell on to her back unconscious."

Sequelae and Recurrence

The only comment that I will make on post-epileptic automatism concerns the odd compulsive repetition shown by some patients. Thus one middle-aged woman nearly always whispers a verse of a particular hymn, while a small boy of 4½ whom I saw some four years ago always hummed the Harry Lime theme from the film *The Third Man*.

A final point which I would mention, familiar to us all, is the liability at times of epilepsy which has long been

dormant to recur unexpectedly when anticonvulsant therapy is stopped, even though this be done gradually. For instance, a young woman had had two major epileptic attacks when aged 17. She then began to take ½ gr. (32 mg.) of phenobarbitone twice daily. She continued this regularly for four years and remained completely free from attacks. She then had no phenobarbitone for one day, and on getting up the next morning she had a major attack. There was no obvious precipitating factor apart from stopping the drug. She resumed regular phenobarbitone and had had no more attacks when I last saw her some weeks later.

It may seem somewhat old-fashioned to-day to discuss this collection of purely clinical trivialities, but they are all manifestations of what Hughlings Jackson described as the "occasional, sudden, excessive, rapid, local discharges of grey matter," and the nature of these themselves is still the oddest thing about epilepsy.

MANAGEMENT OF BEHAVIOUR DISORDERS IN EPILEPTIC CHILDREN*

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New methods of investigation and new anticonvulsants have greatly improved the treatment of children suffering from epilepsy. The most intractable problem remaining is that of the management of behaviour disorders complicating the picture. The following report is intended to illustrate some of the difficulties and achievements that the treatment of these cases presents, for which special sessions of the children's department of the Maudsley Hospital are set apart. The material discussed has been selected by taking those cases which at first interview presented social problems necessitating further interview with their parents. It should be stressed that this group is a highly selected one, not generally representative of epileptic children. Henderson (1953) in a survey of epileptic children of school age, found only 12% presenting problems of behaviour.

At first interview a full social, psychiatric, and medical history is taken, as in the usual working of the clinic, and all children have a routine electroencephalogram (E.E.G.) done and intelligence tests. All the findings are discussed in a conference of the two of us with registrars and the psychologist who tested the patient. Of the 50 cases to be discussed, only 8 had not been seen at some other hospital previously and 33 of them had attended other child guidance clinics or children's hospitals. Twenty-nine of the cases were admitted for further investigation and treatment. Some of these admissions were mainly for psychopathological research or for neurosurgical investigations. Most of the cases could have been dealt with on an out-patient basis only.

One must determine as completely as possible not only the character of the epileptic attacks and their

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place of origin in the brain, but also the nature of the social situation in which the child is living. The behaviour of the child is the resultant of the interaction of its own potentialities and deficits with its environment. (The exact neuropathological lesion—that is, birth injury, vascular accident, or other cause—often cannot be determined, and usually this is not important provided that it is established that surgical intervention is not possible.) There are several varieties of epilepsy in childhood, and their differentiation enables one to make a fair forecast of the child's future progress, as regards the prognosis for fits and for the type of behaviour disorder, if any, which might occur. Pond (1952) has discussed the differential diagnosis of symptoms and behaviour changes sometimes ascribed to epilepsy in children.

The Petit-Mal Child

The clearest-cut group clinically is formed by children who suffer from petit-mal attacks only. Although the attacks are sometimes first noticed after such an illness as measles, there is no evidence that they are ever caused by encephalitis or head injury. At first the attacks are often passed off as inattention, especially since they can often be brought to an end by shouting at the child. The French term "absence" well describes the brief loss of consciousness with few, if any, other changes or movements. The attacks may occur up to dozens a day, and the old concept of pyknolepsy is included in this group. One of the most valuable services done by the E.E.G. has been to delimit this type of seizure so clearly, and the term "petit mal" should be confined exclusively to brief attacks of unconsciousness associated with 3 per second spike and wave. The final diagnosis thus rests with the E.E.G., although all cases can be recognized clinically because of their characteristic total picture.

Such children nearly always have fair or ginger hair and blue eyes. In physique they are lightly built, not strong or muscular, but sometimes rather plump. The outstanding behavioural characteristics of these children are their passivity and shyness. Neurotic symptoms are found, such as nightmares and nail-biting, and the night sweats from which they suffer may also be included here. The emotional precipitation of petit-mal attacks is often clearly described by parents, and it can be demonstrated in case conferences. The attack appears to be precipitated almost instantaneously and it is not secondary to the hyperventilation sometimes produced by emotional upset. A boy aged 9 had his first petit-mal attack when his mother severely reprimanded him for attempting to light an outdoor firework in the kitchen on Guy Fawkes Day. The next one occurred with fright at a Christmas pantomime character.

The child's actual subjective experience of the petit-mal attack does not appear to be always unpleasant. A child recently referred would induce petit-mal attacks in himself by waving his fingers in front of a bright light. Bickford *et al.* (1953) have mentioned others. Because of their peaceable character these children are not a social behaviour problem, but there may be much that needs psychiatric attention because of a rather characteristic family constellation that often seems to surround them (see below). The prognosis in these children is usually good unless occasional major seizures also occur, in which case the whole clinical picture is not so clear-cut and there is much more outgoing aggression.

"Petit-mal status" is rather different and much more disturbing. For example, one boy aged 8 had periods lasting up to 10 days, when he appeared to flicker in and out of semi-consciousness every few seconds. He was incontinent and had to be spoon-fed. There were slight jerks of his limbs and flickering of his eyelids. These periods alternated with outbreaks of violent and uncontrolled behaviour, making him unmanageable at home and in an ordinary children's hospital ward. Large doses of troxidone and phenytoin brought the attacks to an end, with slow im-

provement in behaviour, leaving the child intellectually of the educationally subnormal level. During the confused periods the E.E.G. showed almost continuous 2 c/sec. spike and wave, similar to other reported cases.

Temporal Lobe Epilepsy

In contrast to this group are the children who at birth or later have suffered various forms of brain damage, which have resulted in epileptogenic lesions in the temporal lobes. Rarely, other lesions produce a similar picture (Falconer and Pond, 1953). The fit-pattern is very variable, as it is in adults with temporal-lobe epilepsy. Auras, usually of stomach-ache or other epigastric sensation, are common, and the fit then has a march of events with automatic movements such as chewing, together with turning of trunk or limbs to one side and autonomic changes such as flushing. Consciousness is disturbed to a variable length and depth. This march of events is one of the main differences between temporal-lobe epilepsy and true petit mal, since in the latter, even if there are slight movements such as eye-blinking, these do not progress or change to other phenomena. The child's experience of temporal-lobe attacks appears always unpleasant, and they are never self-induced, although the child may threaten this. It is also interesting that this type of attack cannot be *immediately* induced by emotional upset.

Socially these children are a difficult problem, and the majority sooner or later get excluded from ordinary schools. Their aggression is nearly always externalized in the form of violent temper tantrums, either apparently unprovoked or following the most trivial incidents of sibling rivalry or parental correction. In spite of their usually low average intelligence they have acquired a genius for annoying people. Some of the children appear to be trying to control their aggression by crude obsessional habits such as rituals of cleanliness that may be quite disabling. In general, behaviour and fits show an inverse relationship, a fact which may cause trouble during the early stages of the control of seizures. The severity of the behaviour disorders in these children again depends a great deal on the parental handling. At first sight in the clinic the behaviour disorder may overshadow the fits and appear to have such obvious psychodynamic origins that psychotherapy is attempted. The results are uniformly disheartening even if significant emotional events are ventilated or acted out.

Hill and Mitchell (1953) have noted that, in adults with temporal-lobe epilepsy, procedures such as abreaction may be actually dangerous and precipitate psychoses. Later, however, when the fits are coming under control by drugs and the general atmosphere is calmer, whether the child is at home or in hospital, then interesting and important fantasies may be produced which would appear to have been previously too threatening to the ego to become conscious.

Other Varieties of Epilepsy

The third and fourth categories in the accompanying table are separated according to their aetiology so far as present techniques allow this to be determined. From the psychiatric point of view they show various forms of disturbance and cannot be regarded as uniform groups. The variety of their reactions to emotional stresses is similar to that found in non-epileptic problem children. It is an over-simplification to say that the behaviour is the interaction of "brain damage" and a "neurotic reaction" to the social disability of having fits. Both these terms are too vague to be helpful in understanding what is going on in the child. Brain damage covers a gamut of possible neurological and psychological deficits which may need different treatments. (Hyperkinesia, which is said to be characteristic of "organic" children, is not in fact very common in epileptics.) On the psychopathological side there are great differences between the form and treatment of the passive neurotic reactions of the petit-mal child and the obsessional rituals and attention-seeking of some temporal-lobe cases.

Mental-Defective Epileptics

This is a subdivision clinically useful because in these cases the problems caused by the child's backwardness are more important than the actual fits. Among them there are two varieties that seem to be distinct enough to be mentioned. The first corresponds to that which Gibbs *et al.* (1954) have recently described as showing "hypsarhythmia." They are children in whom at a relatively early age (usually under 4 years) have suddenly developed myoclonic jerks, akinetic seizures, and a whole variety of minor and major attacks. E.E.G.s show generalized abnormalities with multiple spike-and-slow-wave complexes predominating. The condition runs a stormy course for some months, often with tantrums and behaviour disorders in between the groups of fits. Large doses of many anticonvulsants usually bring the attacks to an end, but unfortunately the children's mental development often regresses below that before the onset of fits, and subsequent development is retarded, with considerable mental defect.

The last rather unclear group consists of children who have mainly major seizures of variable length and often occurring in groups. E.E.G. studies suggest multiple epileptogenic foci, but other investigations, such as pneumoencephalogram, fail to show any specific abnormalities. They exhibit in extreme degree the slowness and stickiness that have been so often alleged to be characteristic of chronic epileptics. In interviews the slowness may reach an extreme degree to almost total mutism with rare, slow, drawing comments, which seem to be extruded with the greatest difficulty. There is often a startling contrast between the results of formal testing and interviews and what the parents insist they are sometimes capable of on good days. Socially, therefore, these children are defectives; but, in contrast to the majority of epileptic mental defectives, the degree of backwardness is not the result of severe brain damage but is related to the peculiar and so far unknown physiological effect of the seizures.

The accompanying Table shows that 22 of these 50 cases had been excluded from school. Intelligence tests showed that 20 of them were at the educationally subnormal level or were frank defectives.

Epileptic Behaviour-problem Children—Clinical Data

Clinical Group	No.	Excluded from School	Attended Previous Hospital	Educational Outcome			
				Ordinary School	M.D. or E.S.N.	Epileptic Colony	Mal-adjusted School
Petit mal ¹	9	2	6	7	2	0	0
Temporal lobe	8	6	8	2	1	1	2
Organic ²	8	3	8	4	3	1	0
Petit mal—grand mal ³	16	7	12	10	0	3	3
Mental defective ⁴	9	4	8	0	7	0	2
Total ..	50	22	42	23	13	5	7

¹ Includes one case of petit-mal status.

² All cases with clinical evidence of brain damage and focal fits not of temporal-lobe type.

³ All cases with generalized epileptic discharges in E.E.G. and major and/or minor seizures

⁴ Includes one psychotic child who is socially and educationally defective. The rest of this group had only rare seizures of less clinical importance than the low I.Q.

Parental Reactions to the Child's Epilepsy

The extent to which the child's abnormal behaviour becomes the subject of action by doctors or schools, or even juvenile courts, depends mainly on the parental reaction to the child's total illness. Probably no illness has such a macabre folklore as epilepsy, and no epileptic child has been properly treated until some time has been spent with the parents to explain what is understood by epilepsy and to listen to what the parents think the child is suffering from, so that their fears can be allayed.

Particular parental reactions tend to be associated with the physiological varieties of epilepsy just described. For

example, the petit-mal child is characteristic not only in its type of attack but also in the parental reaction. A number of the mothers of these children show an astonishing contempt for their weakly passive youngsters. They have high and rather rigid standards. They are essentially middle-class in their outlook even when financially of a different status. There is a subtle rejection of these children by the parents, and these family stresses may be so severe that the child has to be removed to an epileptic colony before treatment is successful.

On the other hand, the families with temporal-lobe disorders in their children provide the melodrama of the clinic. They exhibit to an extreme degree many of the types of broken home, foster home, institutionalization, etc., that are seen in ordinary child guidance clinic work. The low frustration tolerance of the epileptic child within this situation usually makes him the main centre of the family turmoils. Even when in-patients, such children may become the scapegoat of the group or bring upon themselves the hostility and rejection of the others.

Precisely by reason of having a physiological disability, epileptic children are almost more prone than others to become the focus of unresolved parental tensions. The unconscious hostility of one parent for another sometimes finds its expression in the rejection of a child who might resemble, in fact as well as in fantasy, unpleasant character traits of the father or mother, or his or her family. Equally, however, attempted abortion of unwanted pregnancy or hostile feelings towards the child in early life may be only too dramatically confirmed when the child develops epilepsy. How often may the divine disease seem the divine punishment for parental wrongdoing. The drugs the child receives are yet another source of anxiety, as parents are often afraid of addiction, with all the unpleasant associations that the term "drug addict" has.

Treatment

So far as details of drug treatment are concerned, there is little to add to the excellent review by Symonds (1950). It should be stressed again that phenobarbitone often produces irritability and that phenytoin may be more useful. Amphetamine is also of value in calming irritable behaviour, as has been noted by many others. Petit-mal attacks are also sometimes diminished in number. Epileptic children are extremely tolerant of drugs in general, and the ceiling of dosage should be determined by the child's individual threshold rather than any particular quantity.

Individual psychotherapy of the children has a limited place. Children with petit mal may benefit from sessions designed to give expression to the tensions that these children often have. No particular technique need be adopted in these cases differing from that used in ordinary child guidance work. A further study of the details of the psychopathology of children with petit mal is in progress.

Some estimate has been made of the amount of time given by the psychiatric social worker to the parents in these cases. Twelve cases needed ten or more interviews, for reasons related more to the emotional difficulties of the parents themselves than to the actual problem presented by the child. On the other hand, mentally defective children often posed a severe problem needing prolonged social handling. The rest of the cases required an average of about five interviews per patient.

Bidwell (1952) discussed some of the problems that are so commonly found in parents' minds. Although the contact between psychiatric social worker and parent may appear brief by some child guidance standards, considerable emotional problems are in fact dealt with in so far as they affect the epileptic child and arise from his difficulties. The process may be compared to a short-term adult analysis designed to relieve a particular set of symptoms. If the mother's personality is basically good, then the whole family situation rights itself. When, however, the epileptic child is the focus of unresolved parental and other tensions, then these may be merely transferred to other siblings. This at

least enables the epileptic child's problems to be considered on their own merits and the appropriate treatment to be successful. For example, a boy aged 6 had typical petit mal, at first treated by another hospital, where it was noted that, whereas all drugs seemed ineffectual at home, the child had attacks while an in-patient only when visited by the mother. She was an anxious woman whose husband was a chronic inadequate psychopath permanently in a mental hospital. With regular out-patient attendance of the child's mother the petit-mal attacks almost stopped on a small dose of amphetamine. The mother no longer worried about him, but problems previously denied as existing in the other children now filled her mind.

It should be stressed how important it is for the psychiatric social worker to have some working physiological knowledge as well as her psychological training. Parents are keen to understand this apparently mysterious disease, and simple explanations along the lines of abnormally excitable areas in the brain, and so on, are of great value in taking away much of the mystery that these children present to their parents.

It is still early days to speak of the effects of temporal lobectomy in the few selected cases in which it has been found possible to do the operation. The results are undoubtedly dramatic, and two or three of the most difficult cases have returned to normal as a result (one was reported by Falconer and Pond, 1953). The pitfalls in trying to deal psychotherapeutically with temporal-lobe cases have already been mentioned. It is important, however, to temper the wind to the shorn lamb after temporal lobectomy. Peaceful behaviour and freedom from fits on the ward may worsen after the child is back in his disordered home.

A boy aged 13 was the illegitimate son of a clever but unstable woman whose own mother, a doctor's wife, had had to assume responsibility for the child's welfare. He was early noted to have nystagmus and spent the first three years of his life in a home for blind babies till it was noted his sight was nearly normal. By then occasional major seizures had developed and he spent his schooldays being moved from boarding schools to colonies because of the attacks and his worsening behaviour disorder. When admitted for investigation he came with the reputation of being a liar, bad-tempered, and sexually perverse. In the ward he was a pathetic ugly duckling rejected by the other children. Tests showed him to be of near average intelligence but educationally retarded. The epileptic attacks were infrequent on regular anticonvulsants, but E.E.G. studies showed a frequently firing left inferior temporal focus. Following temporal lobectomy his behaviour improved so much that his grandmother was prepared to try him at her home. He attended the ordinary local school, and within a year was asked to join a school party going to Switzerland.

The outcome for these 50 cases so far as schooling is concerned shows that nearly one-half went back to ordinary schools, 13 were defective or attended E.S.N. schools, while only five went to epileptic colonies. Two have gone beyond school-leaving age.

These last figures clearly indicate that epileptic colonies play only a limited though valuable part in the care of epileptic behaviour-problem children. Their most important work in this respect lies in preventing the onset of severe disorders by providing a sensible and stable life for children from disturbed homes. At the present time the aim of treatment is to keep children so far as is possible at home and at ordinary schools, as Henderson (1953) has stressed. It may be regarded as a satisfactory therapeutic outcome if this can be done, even when the child is still having occasional attacks. The implication of this trend is therefore that the education of schools and parents in the handling of epileptics is of prime importance. It would be appropriate at this point to refer to the British Epilepsy Association, which is endeavouring to help the welfare of epileptics in these and many other ways. A special clinic such as this has a place in that it helps in sorting out the obscure cases and in handling the most difficult ones.

Summary

The problems of the diagnosis and management of epileptic behaviour-problem children are discussed on the basis of 50 selected cases. Full neurological and psychiatric investigations are needed for the proper application of combined medical treatment and child-guidance technique. The handling of the parental reaction and the educational placement are at least as important as the drug control of the seizures.

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THE MEDICAL ASPECTS OF AMATEUR BOXING*

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Boxing has a wide appeal both as a sport and as a spectacle, and it is estimated that there are at least 100,000 active amateur boxers in Britain. It offers the youth a healthy form of physical training, and as a result of abiding by the laws of boxing he learns discipline and self-control. In some cases it may be a suitable outlet for psychopathic traits, and it is playing a part in combating juvenile delinquency. It is obvious that the medical management of amateur boxing is of much importance, and we propose to consider this aspect as observed by one of us (J.L.B.) over a period of twenty-five years. Special reference is made to head injury and its sequelae, and to methods of preventing the latter. The use of the electroencephalogram (E.E.G.) in particular is dealt with.

Medical Management of Amateur Boxing

In order to make the sport as safe as possible the London Amateur Boxing Association has introduced a scheme of medical welfare which has been approved by the Amateur Boxing Association.

Most clubs have a medical officer, and each boy on joining is given a thorough medical examination. As well as the more obvious disorders, impaired vision or hearing and locomotor defects preclude a boy from boxing. If acceptable, he receives a booklet which he must produce at each contest, and in which is recorded any injury and the period for which he is debarred from boxing. Clubs sponsoring a tournament must supply an approved first-aid kit, and a medical officer is present at each contest.

*Modified from papers read at a meeting of the British Association of Sport and Medicine on March 19, 1954.