cidal substances secreted by them, and not by phagocytosis, secure the removal of the invaders.

It is notorious that the adult dog can tolerate without inconvenience the inoculation of large quantities of bacilli, and, as one might expect, this immunity has been attributed by Metchnikoff to phagocytosis at the site of inoculation. Hektoen later showed that in the presence of dog serum dog leucocytes readily took up *B. anthracis*. It would appear that the serum of the dog has but little or no anthracidal action as compared, for instance, with that of the rabbit, which is, on the contrary, a fairly highly susceptible animal. While without action on *B. anthracis*, dog serum, according to Petrie, has a powerful action on *B. typhosus*. Hektoen attributes some importance also to the leukins of the dog. Petrie, however, found none.

The rat presents a more interesting problem, though it has to be remembered that there is no absolute immunity in this species. Behring, in 1888, showed that rat serum was anthracidal, while Metchnikoff found that the main defence was the phagocytic response. The thermostability of the bactericidal body in rat serum, as shown by Pirenne and Horton, is a most interesting feature. It acts equally well at 18° C. as at 0° C., and remains active for fairly long periods in the cold.

SUMMARY.

To summarise, it must be confessed that the curiously contradictory and yet perhaps genuinely reasonable explanatory theses give us little that is solid to hang on to. No one instance of normal immunity has yet been investigated as a complete problem. Partial mechanisms only have been studied. The hearer might well conclude that dogs are immune because dogs are dogs, and so for rats, fowls, and frogs, but that would not be quite the impression I should like to make. If a certain animal is immune to a particular experimental infection, such as anthrax, one ought to be able to explain fully what local phenomena have occurred to prevent a general invasion by the organism. To do so effectively must involve the testing of each possible mechanism separately and in conjunction, and it must involve a return to the cytological study of the changes which the invading organism undergoes in situ. The problem must be attacked not only by methods which derive their authority from long experience with the bactericidal properties of cells and fluids, but also by methods which reflect the trend of present-day studies on general metabolism both of parasite and host. With regard to the former much has been made of the capsule, but the data on the point are contradictory. In every set of experiments strict attention must be paid to the maintenance of virulence. It may, indeed, be found that by experimental selection a test organism which has once proved virulent for one individual of a resistant species may prove equally so for all individuals of the species. Strains of *B. anthracis* have been thus selected which are alleged to have killed fowls, rats, and frogs, but the experiments lack confirmation.

Another important aspect of the subject which has recently been brought to the forefront by Besredka relates to the site of inoculation of the test organism. In the course of his researches on the production of immunity by vaccinating that portion only of the body which is most susceptible Besredka has turned his attention to anthrax infection in the guinea-pig, an animal notoriously difficult to protect by any method of vaccination. He shows experimentally what, by the way, had been amply demonstrated 20 years ago by Noetzel, that animals like the rabbit and guinea-pig can tolerate easily doses of virulent anthrax if introduced directly into the circulation or into the peritoneal cavity without contaminating the cutaneous tissues. This can be avoided by a special and careful technique. According to Besredka the skin of the guinea-pig is the only susceptible portion of the guinea-pig's anatomy, and if it had no skin it would be a highly refractory animal instead

of being, as it is, one of the most susceptible. He further demonstrated the possibility of securing solid immunity to anthrax, by whatever route inoculated, by vaccination of the skin with the attenuated Pasteurian vaccines. I do not wholly accept much of the evidence adduced so far in support of the conception of partial or local immunities or susceptibilities, but I believe the matter is worth the fullest investigation. In any case it is obvious that future work on natural resistance must take count of the possibility of very diverse immunities or susceptibilities apparently combined in one immune whole.

I have dealt in this address with species resistance solely, but it has to be remembered that there are racial variations of resistance within the species. For this reason the study of the mechanism of normal immunity will doubtless demand the services of the geneticist, who will be responsible for securing pedigreed stock for experimental purposes. This is no fanciful suggestion. In connexion with these most promising developments in experimental epidemiology which are being carried out in this country and in America the services of the geneticist must be invaluable. The dietetic factor, too, may prove of supreme importance in experiments on natural resistance, and there is already a body of evidence pointing in this direction. It is possible also that we may learn from comparative observations on the rationale of natural immunity in plants to fungal infections. In a recent address by Blackman some of these mechanisms reveal extraordinarily interesting relationships between the attacking fungus and the cells of the immune host. In conclusion, I feel that I have touched but the fringe of this vast subject, but if my exposure of the little we really know may stimulate further research I shall be content.

BEHAVIOUR CHANGES SUPERVENING UPON ENCEPHALITIS IN CHILDREN.*

BY G. A. AUDEN, M.A., M.D. CAMB.,
F.R.C.P. LOND.,

SCHOOL MEDICAL OFFICER, BIRMINGHAM.

IT has long been recognised that changes in behaviour, more or less profound, not infrequently supervene upon certain inflammatory conditions or injuries of the brain. Only within the last two or three years, however, has the occurrence of the infection known as encephalitis lethargica supplied sufficient material for the study of these characteristic alterations. In a large number of cases which recover from this infection the after-history shows a definite and clearly marked change in reaction to environment which reveals itself as altered behaviour. The opportunities for a careful investigation into these changes are more favourable in dealing with children than with adults, though inquiry from the patient's friends will often elicit the fact that, since their illness, they have shown an irritability of temper or an intolerance of control, which renders them "difficult" or "impossible" to live with. The quiet housewife develops the temper of a shrew, or the model husband begins to neglect his home; such alterations in conduct, disconcerting and often quite inexplicable to the patient's friends, may assume a sociological importance, for cases will probably occur in which the question of criminal responsibility is raised, and the fact of a previous attack of encephalitis may be urged in defence of the perpetrator of some antisocial act which has brought him within the reach of the law.

Frequency.

Out of the cases in all ages notified in the City of Birmingham in the three years 1919-21, 15 have been described as showing some degree of mental or character change. It is, of course, too early to state how far these changes are permanent, but amongst children

* Read at a meeting of the Northern and Midland Division of the Medico-Psychological Association.

they are not infrequently of a very distinctive type, and serve to bring them within the purview of the children's court. Various educational and administrative difficulties thus arise.

We owe to Dr. G. F. Still¹ the first systematic study of the defects of moral control in children. Most of the children who recover from encephalitis attract attention by some disturbance of conduct or of quality of school work. In a small number of cases mental impairment reduces them to a condition of imbecile fatuity; the problem of their treatment then presents little difficulty, for they can clearly derive no benefit from education in an ordinary elementary school, and require protection and care. In other children, however, the capacities show little reduction, and such defect as may be present is masked by a perverseness of conduct which constitutes a nuisance to parents and teachers alike. The appropriate method of dealing with them then becomes a question of no little difficulty, as will be seen from the following series of cases which have come under my observation during the last two years.

CASE 1.—Female, born 1912, second of five children; others normal. Examination April 20th, 1921: Mother's report, "Began to talk and to walk early. Was forward in everything till she was taken bad two years ago."² Was then in the General Hospital for three months (diagnosis encephalitis), during which time she had two fits. On her return from the convalescent home was noticed to be changed in character. "She would grab hold of anything and take it if she wanted it. Will go into shops and take anything." Is very destructive, "cut up the sheets and curtains to make her doll's clothes, she also cuts up her own clothes; picks her nose and eats it, will pick up orange peel out of the gutter and eat it, set the baby's head alight with a candle. Will take her father's food from under his eyes. If locked up in a room will escape through the window or in some other way." She was promoted to the upper department, but was afterwards returned to the infant department. Mental equipment very poor. Cannot write her name or copy a square. Admitted to a special school, found to be exceedingly intractable, and finally sent to the infirmary, from which, after an escape, she was sent to the school department of the Monyhull Colony. March, 1922: Is stated to be "one nurse's work." Restless, talkative, entirely undependable and intractable. Constantly edges her way to the boys' side of the class-room, and shows marked sexual proclivities. Is very self-assertive and desirous of attracting the notice of any visitor. Educational attainments exceedingly meagre. There is little doubt that this girl will require permanent custodial care.

CASE 2.—Female, born 1913, third of five living children. Parents careful and intelligent. Child began to walk at 12 months and to talk at 18 months. History: Normal till March 18th, 1918, when she "had a fit," remained unconscious for a week, admitted to Children's Hospital. On discharge ten weeks later was noticed to be "cross-eyed." A month later had a "fit," "went into a stupor for several hours." "Since her illness has become completely changed." May 26th, 1919: I first saw her on this date; during the previous week she had stolen money at school and at home. School report: "Quite quick, irritable and selfish, bites and pinches other children." Talks very little, somewhat indistinctly. Restless and inattentive, mischievously prying into my cupboards and moving the things on my desk. Complete lack of shyness. Reads words of three or four letters very readily when her attention can be secured. Calculates up to 1s. quickly and accurately. Fails entirely with Healy's form board. Sept. 19th, 1919: In consequence of her habits and propensities was sent into Erdington Infirmary. Bit and scratched the nurse in charge, escaped down fire-escape, and climbed over high railings. April 14th, 1920: Recognises pictures and calculates quickly and readily. Recites poetry from memory. Restless and fidgety without any concentration. Does not appear to have stolen recently. June 2nd: Restless and imperative in her demands. "Pushed her small brother into the canal. Hit her elder sister over the head with a bottle, says 'it was only playing.'" Stole a small child's handkerchief and bananas in the street. Talks incessantly. August 22nd, 1921: Behaviour improved until the beginning of July, when she began to steal again. Had not been found stealing since the previous November. Wanders off, taking small children with her, often strangers, thus preventing them from going to school. Is causing much trouble with the neighbours on account of her thieving habits. "Will pick up any bits of food out of the gutter and eat it." "Went into a neighbour's house and took money from the table."

"I took two half-crowns and two shillings, also a cake which I ate. The money I did not want I chucked down the sough." Her conduct is marked by foolishness and a complete lack of appreciation of the results of her actions. The children annoy her by calling her "balmy." She retaliates by hitting out wildly at the nearest, and possibly quite innocent, child. Her behaviour finally became such a nuisance to the neighbourhood that she was readmitted to the infirmary.

March 1st, 1922: Medical officer's report, Erdington Infirmary:—"Physically she does not appear to have any defects, but morally she is not all that could be desired. She is spiteful, bad-tempered, and constantly pilfering any little thing she happens to see. She knows it is stealing, but does not think she is doing any particular wrong. She is bright and fairly intelligent, and I should say would considerably improve with suitable training."

CASE 3.—Male, born 1908, quite well till Dec. 29th, 1919. Felt "sick" and was taken to the Children's Hospital, where he remained till Feb. 5th, 1920. Dr. L. Ball, under whom he came, writes: "He was a typical case of encephalitis lethargica. Slight pyrexia for 14 days after onset. Profound lethargy, unequal pupils, no squint, no nystagmus. Knee-jerks exaggerated. No Babinski. Slight lymphocytosis of cerebro-spinal fluid." May 12th, 1920: Shows twitching of facial muscles, with a marked stutter. Father reports: "Must have his own way in everything, if he does not he goes on and cries. All he likes to do is to order others about. He takes liberties with his mother." Is said to be difficult at school, where he is in Standard VI. No history of fits of any kind. Feb. 11th, 1922: Referred to me by the magistrate for examination, having previously been placed on probation for stealing. Father reports: "He has a mania for stealing. He's a good lad at home, but the moment he gets out of your sight there's no accounting for him. He takes from the shops apples, fruit, &c. Generally in a gang, they use him as a tool. Still tries to get his own way, but does not get into tempers now." Mother gives way to him. Father a strict disciplinarian. "Does not play games, but will read anything that he can lay his hands on." Reads well and intelligently, recognises a fallacy easily and with good discrimination. Did Demoor's sensory illusion test correctly. Manners good and correct. Thoughtfully returned his chair to its proper place on leaving my room. Has lost the facial twitchings and stutter, but these are said to return if he becomes excited. March 23rd, school report: "Doing good work in the top class of the school, Standard VIII. Since my last report, dated Oct. 28th, 1920, has shown considerable improvement. General conduct more normal, except that he occasionally shows signs of nervousness and is sometimes irritable. Attention is better sustained, marked improvement in response and interest. Still, however, very self-assertive, is certainly not of a retiring disposition." June 20th: Again charged at the children's court, having stolen flowers from a garden and done damage to trees to the value of 5s. Again placed on probation.

Note.—Since this paper was written he has again been before the children's court, and on August 16th, 1922, was committed to a reformatory on the charge of stealing four mouth-organs.

CASE 4.—Male, born 1912. Mother dead, lives with his grandmother and is somewhat neglected. Father a respectable hard-working man.

Examination June 24th, 1920.—Normal till illness a year ago, when he was in hospital for 12 weeks (notified as encephalitis). Grandmother now complains that she can do nothing with the boy. In the daytime he appears to behave normally, but at night becomes restless and destructive, gets out of bed and destroys things, breaks crockery, &c. Is stated to drop to sleep at all hours of the day, both at home and in school. Many complaints of his conduct in school. Found to know letters only, but could calculate up to 1s. correctly. Facile and plausible, but very fidgety, playing with articles on my desk, &c. March 4th, 1921: Answers rationally and with intelligence. Knows letters only (had been away from school for four months); memory span of six figures. Counts from 20 to 1 correctly. Memory drawing (Terman) exceedingly good. No concentration, attention wandering. Did Healy's form board with little difficulty. Said to get up at night (apparently in a somnambulistic state) and break the cups, &c. Father afraid that he will set the house on fire; wildly excited and "up to all sorts of tricks." Locked his father out of the house all night, on his return home from night-work. Subsequently certified as feeble-minded and sent to a special school in May, 1921. Report on admission to special school: He falls asleep while standing at his desk. Has frequently been found by the teacher asleep on the school steps on her arrival at 9 A.M. Father says that through the night he is wakeful and keeps the whole household awake. For the first few months at school he was set apart from the other children and was allowed to sleep until about noon each day. Even now he shows a tendency to fall asleep in school, if the lesson does not arouse his interest.

¹ Goulstonian Lectures, THE LANCET, 1902, i., 1008, 1077, 1163.

² Notes in inverted commas are the verbatim statements of the parents.

March 21st, 1922, school report: Is now practically normal and making good progress both in "three R" work and in handwork. His father writes: "Although put to bed at 7 P.M. each evening he never goes to sleep until the early hours of the morning, but he is not violent now." His behaviour in school has always been orderly, and he cannot be described as feeble-minded. This boy will be able to be returned to an ordinary elementary school.

CASE 5.—Male, aged 10, youngest of six children. Parents careful and intelligent: reported to health department as encephalitis on May 6th, 1918; stupor, ocular paralysis, and strabismus. Examination, Nov. 12th, 1919: Prior to illness normal in every way; is now very quick-tempered and irritable. Excitable, especially toward evening. Talks and walks in sleep. Moral behaviour has always been, and still remains, good. No affection of cranial nerves. No ptosis. Is in Standard IV. General intelligence good. An omnivorous reader.

March 23rd, 1922, school report: "Backward for his age (13), is only in Standard V. On casual observation gives the impression of being lazy, but I am inclined to think that he lacks the power of application. In response, attention, and interest he lacks the concentration of the average scholar."

CASE 6.—Female, born 1910; easy labour, second of four children. Began to walk and talk at 18 months. Went to school at 5 and was an ordinary child till May, 1919, when she was brought home from school with retention of urine. Became delirious during the night, and was taken to the Children's Hospital on the following morning, in a "semi-conscious" condition, blind in right eye. Diagnosis, encephalitis. Consciousness returned after three weeks; she was transferred to the infirmary, where she remained for seven months. At first lost the power of speech. Choreiform movements of arms appeared soon after transfer. Examination Sept. 9th, 1921: Movements very slow and deliberate. Failed completely with doll test, but did first form board correctly. Added three pennies and three half-pennies correctly. Did card test rightly on second attempt. Could write her name and knew letters but had no synthetic power for words. Apparently some eye defect. Mother's report: "Does not get to sleep till 6 in the morning. She tears all her clothes off her. She wriggles like a snake. Is easily roused to a passion. Is always pinching other children. Is always sleepy and wanting to lie down. Likes poking the fire." Wets her bed and clothes. Feb. 7th, 1922: Slow and almost stuporous, movements slow. Said to go on errands and to bring back the correct change. This I greatly doubt. Some fundus changes in eyes, especially right. Is still an out-patient at the hospital. In my opinion, slowly improving, but much below normal mental development.

It will be seen from this series of cases that the chief character changes found in children are an increased emotional instability with a reduction in the volitional inhibitions, leading to aberrations of conduct, a marked restlessness, especially in the evening accompanied by nocturnal wakefulness (which may be associated with hallucinatory manifestations) an apathy and inability for sustained attention, and an irregular type of intelligence capacity as revealed by educational tests. The majority of these cases show a heightened sensibility to environmental stresses. The chief interest of the cases is, however, the question of the relationship which they appear to establish between an organic lesion of the brain and the power of moral control. Still, in his Goulstonian lectures, already quoted, contends that moral control is dependent upon three psychical factors—viz., (1) A cognitive relation to the environment, (2) moral consciousness, (3) volition. Before we can accept this tripartite basis we shall find it necessary to define what is meant by "moral consciousness." If we mean thereby the capacity for weighing the consequences, immediate and remote, of an action or of abstention from such action, and of forming judgments by the exercise of reason, then the term may be satisfactory. Still seems to accept this view, for he writes:—

"Both the simple cognitive relation to environment and the moral consciousness, which are essential to moral control, imply a reasoning comparison, albeit of very different degrees of complexity, and may therefore be regarded as intellectual processes, and consequently, in so far as defect of moral control is dependent upon the lack of these, is in itself a manifestation of impaired intellect."

Kühner has likened moral control to the topmost floor of a three-storeyed house. The ground floor is cognition (*Erkenntnisvermögen*), the first floor volition, or the

power to exercise will (*Willensfähigkeit*), and the second or upper floor is the power of control, or inhibition (*Widerstandsvermögen*). The chief defect of these suppositions lies in the fact that they appear to ignore the affects which are in inseparable association with every action or conation. On the other hand, Tredgold approaches the question of moral control by the postulation of a moral sense, comparable with the specific senses. He writes:—

"Just as each normal person possesses certain 'special' senses which enable him to appreciate sights, sounds, tastes, smells, and touch, so each normal person possesses certain senses which enable him to appreciate, to feel, and to act in accordance with certain ideals."

Here he is surely misled by his own false analogy, and his argument fails to carry conviction. The more acceptable position is that taken by Terman,³ who writes: "Moral judgment, like business judgment or any other kind of higher thought-process, is a function of the intelligence." The power of foregoing immediate gratification for the sake of a future advantage depends partly upon memory, partly upon judgment and comparison (which in turn depend on memory), and partly on reason (which depends on judgment and so ultimately on memory). As Spinoza has said, "intellect and will are one and the same." Few will be prepared to deny that memory is a matter of the intellect, and will is, after all, a compromise between impulsions to action and inhibitions based upon reason and judgment.

The behaviour changes which make their appearance as the result of encephalitis seem largely dependent upon a changed reaction to environmental conditions, together with a heightened sensibility to their affective tone, with a reduction in the volitional inhibitions. Thus, to return to Kühner's analogy, while the ground floor, cognition, is present, the first floor is defective. Herein may be noted the marked contrast between meningeal and subcortical lesions. For example, in no case of cerebro-spinal meningitis notified in Birmingham during the last three years have any such character changes been found.

It will be noted that many of these children exhibit the same general temperamental type as that which we are accustomed to associate with the epileptic condition. There is the same irritability, lethargy, introversion, self-assertiveness, and absence of resistance to sudden impulsions which are so often seen in the psychical equivalents of an epileptic attack. The ingravescence of restlessness towards evening and the early part of the night has also its counterpart in the greater frequency of fits and the occurrence of night-terrors during the first hours of sleep. This analogy must not be pressed too far, but the similarity between the two conditions, especially in conduct, warrants careful consideration.

CASE 7.—Male, born 1915. Began to walk at 18 months and to talk at 15 months. At age of 3 fell off a cart on to his head and had a fit. Since then fits, sometimes two or three in the night; may go three weeks without an attack. Recently had 17 fits in one day. Attacks begin in right hand; left side of face said to twitch. Examination Feb. 21st, 1922: Examined for children's court. Asked teacher to allow him to go to urinal. Slipped out of school, went behind the counter of a draper's shop, and stole money from the till. Bought a complete Scout's rig-out with belt, knife, and whistle, put them on, and returned to school within the hour. Gave the remaining change to the teacher. Frequent other thefts admitted by the boy. Said to be bad-tempered. Mentally unusually sharp for age. April 26th, 1922: Again examined for children's court. Charged with not being under proper guardianship. Mother says his behaviour has been better since previous examination, but has twice been brought home by police for attempted shop-lifting. Has had three fits since Feb. 21st. Restless, excited, talkative, and inquisitive. Did form board A and B readily and added three pennies and three halfpennies at once. Reads an Infant Reader quickly and intelligently. Writes a simple sentence from dictation correctly. Gives a glib account of his thefts. Police say many complaints have been received from the neighbours.

Being under 7 years of age he cannot in law commit a crime. There seems to be little doubt that in this

³ Measurement of Intelligence, p. 11.

case the behaviour was of the nature of a fugue. The boy has since been sent to a colony for epileptics.

The psychic manifestations of chorea appear to belong to the same order. Here we have a similar congeries of mental symptoms—the same faulty emotional control, with outbursts of irritability and departures from correct behaviour, the same reduction in the power of attention and concentration, and on the physical side the same type of muscular incoördination and weakness.

Prognosis.

The process of recovery of the physical sequelæ is slow but, speaking generally, ultimately complete. In the larger number of the cases detailed above there was also a gradual improvement in the behaviour and self-control, even in some of those children whose conduct has given the greatest cause for anxiety and made the outlook appear grave. This tendency to a gradual recovery is of the utmost importance from the point of view of treatment and disposal, and has a far-reaching bearing upon the whole question of juvenile delinquency, for exactly the same type of behaviour, without any appreciable intellectual defect, is exhibited by a certain number of children without any previous history of encephalitis or other lesion of the brain, whose persistent wrong-doing, despite persuasion, exhortation, or punishment, bring them within the accepted definition of moral imbecility. I have elsewhere expressed the view that this term is unsatisfactory, if we accept the Determinist standpoint that every psychical phenomenon must have an antecedent psychical cause. I believe that the more we understand the immense importance of repressed complexes upon the malleable minds of children, the less disposed we shall be to cut the Gordian knot of diagnosis by merely labelling such perversions of conduct as moral imbecility.

Much of the aberrant conduct of children can be explained as the result of regression. The progress towards a re-acquisition of the social virtues and a re-establishment of moral control, shown by the majority of the cases quoted in this paper, warrants a favourable prognosis and is, therefore, wholly against an undue haste in dealing with them as mentally deficient. This is an issue of great practical importance, when the question of disposal is under consideration, from either the educational or the sociological point of view. The Mental Deficiency Act, 1913, introduces into the definition of the class of person who may be dealt with under that Act two postulates—viz., the existence of defect from an early age, and a permanent incapacity to receive proper benefit from instruction in ordinary schools. It is clear from the context that the word “permanent” has here a very restricted connotation. In my own opinion this clause in the definition would have been better omitted, as children of deficient intellectual capacity are already dealt with by the Elementary Education (Defective and Epileptic) Act, 1899. But the majority of these cases do not conform to either of the postulates here laid down. The deficiency has not existed from birth, and it is highly questionable whether an onset at an age of 8 years or more can be included in the phrase “an early age.” Moreover, the progress towards recovery which is manifested by the larger number of these cases solves the question of permanency. If we extend the meaning of “an early age” so as to include elder children, then we find ourselves on the horns of a dilemma, for in that case there is no logical reason to exclude dementia præcox, or even paranoia, from the same category. Yet the inclusion of such cases within the terms of the Mental Deficiency Act would be admittedly without justification. It may be urged that, if the parents are consenting parties to the petition under Section 2 (a) of the Act, the magistrate who hears the petition, on being satisfied that care, supervision, and control are in the interest of the patient, may make the order. If, however, consent is withheld, the magistrate is likely to require clear and indubitable evidence as to the early date of appearance, and the probability of permanent intellectual defect. In a

paper read before this Association in July last I stated that these cases of post-encephalitis changes could not be dealt with under the Mental Deficiency Act. This statement produced a letter from Dr. W. B. Drummond,⁴ in which he stated that he had in the institution under his care two children who had been certified as moral imbeciles on account of vicious propensities apparently resulting from their illness. This method of procedure, though undoubtedly convenient, seems to be an undue straining of the intention of the Act, and Dr. Drummond himself writes that it would have been a better course to certify them as feeble-minded rather than as moral imbeciles. But from what has been stated above the inclusion of this class of child in the group of the feeble-minded under the Mental Deficiency Act presents equal difficulties.

The Defective and Epileptic Children Acts, 1899 and 1914, offer an easier path for dealing with children for whom special supervision and education is indicated for the definition used includes neither the question of early age or permanency, but simply specifies a mental incapacity to receive benefit from the teaching in an ordinary school. Should the mental condition in time warrant return to such a school, there is a stipulation that the certificate of mental defect shall be handed to the parents. Should the mental condition, however, not improve, the child will pass at the age of 16 under the provisions of the Mental Deficiency Act (Section 2, (2) (b)).

A still readier method of procedure is that under the Poor law.⁵ Here the sole criterion is a lack of parental ability to supply the necessary protection and control, coupled with an unsuitability for an ordinary school or institution. For the more intractable types of children this means of disposal will often be found the most satisfactory. Whatever method may be adopted, the main aim is clearly the restoration of emotional balance by diminishing as far as possible environmental stress. A prolonged holiday in the country or at the seaside may serve to accomplish this end, but for the majority of children, whose life is passed in overcrowded homes and noisy streets, this is impossible. For them the regulated and orderly routine of an institution offers the surest road to mental re-adjustment and to the re-establishment of normal self-control. The difficulty which faces us is that of securing this end within the limitations placed upon our powers by existing legislation.

⁴ Brit. Med. Jour., 1922, i., 122.

⁵ (Local Government Board (Mentally Defective Persons) Order, December, 1911. “Persons . . . who by reason of mental defect are incapable of receiving proper benefit from ordinary instruction, or cannot be properly trained in association with other persons, in ordinary schools or institutions, or are incapable of using ordinary means or precautions for protecting themselves from injury or improper usage or treatment, or incapable of maintaining themselves by work.”) Subjects to be dealt with under this Order must be under 21 years of age.

NEWCASTLE-UPON-TYNE AND NORTHERN COUNTIES MEDICAL SOCIETY.—The first meeting of the session was held in the Royal Victoria Infirmary on Oct. 5th, with Prof. Stuart McDonald, Vice-President, in the chair. Cases were shown by Dr. W. E. Hume, Dr. Horsley Drummond, Dr. George Hall, Mr. H. Brunton Angus, Mr. S. S. Whillis, Mr. R. J. Willan, and Mr. Hamilton Drummond. The pathological specimens were arranged by Mr. W. E. M. Wardill, curator of the Museum of the Durham University College of Medicine. A paper was read by Mr. F. C. Pybus on Some Surgical Aspects of Dyspepsia. During the meeting the news was received of the death of Dr. Lachlan G. Fraser, the President of the Society, and a vote of sympathy with his widow and family was passed. The Society meets monthly during the winter session, and in addition to the ordinary meetings two clinical and pathological meetings have been arranged for the convenience of country members at 4.30 P.M., one during the past week and one on Jan. 24th. The annual address is to be delivered on Dec. 7th by Sir Humphry Rolleston on Reflections on High Arterial Blood Pressure. The annual dinner will be held the same evening, when Sir Humphry Rolleston will be the guest of the society. On Feb. 1st an address on Diagnosis in Surgery will be given by Mr. D. P. D. Wilkie, of Edinburgh.