all those causes, whether physiogenic or psychogenic, which act as exciting factors in the production of the psychoses and psychoneuroses, it may be hoped that the abnormal mental states constituting them may not become firmly installed and organized, thereby causing a vicious circle to be established. For the persistence of abnormal mental states produces digestive, assimilative and metabolic disorders of the body, and auto-toxæmia, which can react back on the highest evolutional level of the brain, tending to permanent functional disorder and eventually to its partial or complete abolition—secondary dementia.

A streak of insanity, a streak of genius and creative imagination is not harmful to the race. The danger to the race is not from a tendency to a high degree of plasticity of the highest evolutional level, but to an increase of an inborn tendency to a functional or organic regression of it, resulting in various degrees of imbecility. As the higher-grade imbecile possesses the animal passions and is fertile, it follows that more than a streak of mental deficiency in a race constitutes an urgent social problem of national importance. Hitherto nearly all the efforts of the State have been towards legal detention of the mentally afflicted (under humane conditions it is true), but little has been done in the way of prevention or cure. I hope that this Society will, in the future, take an active part, firstly, in promoting research in the biological, social and psychological causes of mental disease, with a view to prevention; and secondly, in furthering the application of the principles of general medicine, including psychotherapy, with a view to the cure or alleviation of mental diseases and disorders.

(2) In the *Archives of Neurology*, vol. vi, two valuable communications are given: "The Investigation of Twenty-five Pedigrees of Insane Persons," by Dr. Hill Wilson White; "The Investigation of a Number (Ten in all) of Family Histories of Patients in Cane Hill Asylum," by Dr. J. C. Wootton. These are very carefully constructed pedigrees, extending from three to six generations and including collaterals.

Encephalitis Lethargica—its Psychological Implications.(1) By G. A. Auden, M.A., M.D., F.R.C.P., D.P.H., School Medical Officer, City of Birmingham.

The gradual rise in the yearly incidence of encephalitis lethargica, culminating in the serious epidemic which marked the first half of the past year, and the tragic results which so often follow, have invested this disease with a sinister importance. But there are other reasons which make this infection peculiarly suitable for

(1) A paper read at the Annual Meeting held at Birmingham, July 8, 1925.

consideration at a meeting of the Medico-Psychological Association. These reasons have been well described in a recent paper by von Economo, who gave the name to the disease in 1917. He writes(2):

"Encephalitis opens up an entirely new outlook in psychiatry and neurology, and offers new possibilities for investigation, which it is to be hoped will bring us to a better understanding of the psychoses and neuroses. It is, moreover, not only a new disease in itself, but it has given us an entirely unexpected insight into the psychological and physiological mysteries of mental mechanism—knowledge which will perhaps exercise a great influence upon others besides the medical profession."

Although the acute stages of the disease are often so indefinite (certainly so far as the last epidemic is concerned), that it is not always possible to arrive at a diagnosis, yet the later manifestations, both somatic and psychic, are so constant in their association that they form a syndrome which gives a clinical picture that is characteristic of a definite and distinct morbid entity. This post-encephalitic syndrome has an important bearing on the question of the relationship of this infection to the influenza epidemics of the past. Certain observers, notably Hamer and Crookshank, have regarded encephalitis as a "trailer" epidemic which succeeds the receding wave of influenzal incidence. But the term "influenza" includes so varied a congeries of symptoms, which offer different clinical pictures as epidemic succeeds epidemic, that this observation does not carry us very far. One fact in this connection is, however, noticeable, *viz.*, that, accepting the view that encephalitis belongs to the Heine-Medin group of infections of the central nervous system, there has been a very marked alteration in the relative incidence of the different members of that group in the last few years. Thus the curve of incidence of cerebro-spinal meningitis has dropped steeply and continuously since 1917, while anterior poliomyelitis has shown a similar but much less pronounced fall, yet on the other hand encephalitis lethargica, since it became a notifiable disease on January 1, 1919, has shown a rapidly ascending rate of increase, culminating in the steep epidemic rise which was so conspicuous, especially in some of the larger cities, during the year 1924. Since the beginning of the present year there has been a more gradual fall.

The infection is often ushered in by constitutional disturbances, such as slight diarrhœa and sickness, and the whole clinical picture is one of a generalized toxic condition, which, however, falls with chief force upon the nervous system. In this connection the theory introduced by Levaditi (*Monographies de l'Institut Pasteur*, 1922) is of extraordinary and illuminating interest. He draws attention to the fact that certain ultra-viruses have an elective

affinity for tissues derived from the embryonic ectoderm, *e.g.*, skin, cornea and nervous system, whereas others have a predilection for mesodermic tissues, *e.g.*, peritoneum, lymphatic glands and the blood. These neurotropic ultra-viruses, he believes, can be arranged in a series in accordance with the character of the affinity for different ectodermal tissues. Thus variola has a compelling cutaneous affinity, but occasionally attacks the central nervous system, producing coma or an encephalitic hemiplegia, but especially a myelitis or peripheral neuritis, which may lead to the pseudo-tabetic *ataxie variolique*. Use is made of the readiness with which the cornea is involved in the Paul test for variola by inoculation of the scarified cornea of a rabbit. Next in the series is the encephalitic group, including the so-called salivary virus, that of herpes labialis and that of encephalitis. The virus of rabies, though not showing clear local lesions, *e.g.*, of skin or cornea, may use these as tracts of entry to the central nervous system, for which it has a compelling affinity. Lastly poliomyelitis shows no affinity for epidermis or cornea, but only for the central nervous system, and though it may produce a polio-encephalitis, it exhibits a special predilection for the grey matter of the anterior horns. Such a view, it may be added, removes cerebro-spinal fever, due to a definite coccal invasion of the meninges, from its Heine-Medin associations.

But the problem which concerns us is neither the bacteriological nor the epidemiological characters of the disease, but its psychological aspects, especially those which may be regarded as the later manifestations of the disease.

As my personal experience has been entirely confined to the disease in children, I propose to limit my consideration to the age-group five to fifteen years. Such a limitation has, however, certain advantages, for during this formative period of life character is comparatively simple, and behaviour less sophisticated than in adult life. At a paper read before this Association in 1921, and again before the Northern and Midland Division in April, 1922, I drew attention to the frequency with which certain moral changes are found to supervene in children, more especially in the direction of persistent thieving and lying. Since that date similar sequelæ have been described in America, Austria, Denmark and elsewhere. This failure of adjustment to the social order occurs so frequently, and under such various social conditions, that there is clearly a definite causal relationship between the physical conditions induced by the infection and the subsequent aberrations of conduct. But apart from these actual delinquencies, there are other features of behaviour, *e. g.*, the spitefulness and disobedience, the noisy excitability at night, and the persistence of certain perverse habits, such

as tearing the clothes to pieces, the frequency of tics and habit spasms, etc., which seem to bring the disease into a definite relationship with certain types of mental disorder. These and other cognate character-changes raise certain other psychological problems of considerable interest and importance, especially the question of the relation of volition and moral responsibility to morbid physical states. If there is, in these cases, a causal relationship between the psychical phenomena of the behaviour and a physical lesion of the brain, we are driven to the conclusion that other cases of perversions of conduct and failure of control, such as mark that very indefinite class designated "moral imbeciles," may have a similar causal relationship, even though no clear evidence or history of illness, such as encephalitis, is forthcoming. In this connection, it may be mentioned that although sixty children were notified in 1924 to the Medical Officer of Health for Birmingham, no less than forty unnotified children have been presented to me for examination on account of the later sequelæ, in whom the initial symptoms were so slight as to escape recognition at the acute stages of the infection, but whose medical history gave clear and unequivocal evidence of encephalitis.

The following case illustrates this difficulty:

G. R—, born June 12, 1911, the youngest boy in a family of three brothers, but with four younger step-sisters.

In May, 1924, had "influenza." No history of squint or diplopia. Is said to have been "dazed and sleepy." In July was admitted into the infirmary for 14 days. On discharge was completely changed in character. The following is his mother's description of his behaviour*: "The first occasion my husband and I had been out, and when we came home there were three neighbours in the house. He was keeping them at bay with a knife and a chair. Once or twice he has nearly pulled my hair out. One time he fair flew at his father. He's been sleeping by day but at night he's been jumping and twirling. He makes such hideous noises when he's about. He's on all the time. At times he's absolutely ravenous with eating. He gathers and accumulates all sorts of rubbish as no one would think of. We've often to turn out his pockets—bits of tin, bits of string and such like. And he'll sit and he'll laugh till he's almost in hysterics. He did it on Sunday night last for a good twenty minutes. He's more for playing with the younger children, but he's very irritable with them."

This lad, whose conduct his mother has so graphically described, is usually a nice-spoken and well-behaved boy with ready intelligence and good response. Reads well, with good expression and knowledge. Calculates accurately and quickly. His headmaster, however, reports that there has been a general falling off in his work. He has shown no tendency to steal or to erotic manifestations. Apart from considerable pallor, there are no signs of illness except a fine tremor of the hands. He is said to have "giddy turns," but has never fallen, and there are no other signs suggestive of *petit mal*.

The appearance of choreiform movements in some children as one of the early signs of disorder led, in a certain number of cases, to a diagnosis of chorea. In none of the series did the choreiform

* Throughout the paper verbatim statements by parents are placed in inverted commas.

movements persist to the later stages, nor have I been able to find any correlation between their presence and the degree of emotional instability subsequently exhibited. The psychic manifestations of chorea are well known, and exhibit a certain similarity with those which we are now considering. There may be the same faulty emotional control with outbursts of irritability, wilfulness, with alteration of disposition, and character changes, together with a fall in the powers of attention, and enfeeblement of memory. A more interesting parallel, however, is to be found, both in the early onset of acute " tremors " and in the pathological lesions of polio-encephalitis of the cerebello-rubro-spinal system described by Miller (*Brain*, 1909) and Parsons (*Birmingham Medical Review*, April, 1910). The following case illustrates the early onset of choreic symptoms, which were succeeded by typical emotional changes :

F. F—, born March 1, 1912. Went to bed apparently well on April 18, 1924. At 6 a.m. woke up, calling out, " Oh ! the gorilla," and fancied that there was a motor car with people in it outside the window. The following morning was noticed to be fidgeting and cutting up a pair of gloves. Taken to a doctor, who diagnosed chorea. Says that he saw double. " All the pictures seemed far away from me." No squint or ptosis was noticed. Was kept in bed for a month, during which tonsils and adenoids were removed. On getting up slept much during day, but got very excited at night time. " Used to get up and toss the bed-clothes about, and walk about the landing singing and saying his prayers."

Present condition.—Knee-jerks normal. No squint or ptosis. "Very irritable." " He seems to be of a jealous nature; his temper seems to get over him." No thieving propensities, and general behaviour good. No chorea, and only a very faint tremor of fingers. Intelligence very good.

It may be remarked that in the chronic condition, somewhat unfortunately labelled as " Huntingdon's chorea," definite mental symptoms occur as one of the essential elements of the clinical picture. Diefendorf (3) thus describes them : " These symptoms consist chiefly of a history of excessive nervousness, irritability and excitability, which appear in childhood and persist through puberty and early manhood, usually becoming more pronounced as the individual approaches middle age." Again of another series he writes : " The usual order of the development of the symptoms was first the appearance of an increasing emotional irritability, in passionate outbursts, abuse, and sometimes even violence and destruction of articles in the environment . . . in addition there occurred at the same time a gradually increasing *emotional deterioration*. Some patients become intemperate, others immoral. A number of my men patients gave up regular occupation, and for a number of years followed the life of a tramp. . . . The patients lost their sense of responsibility in reference to their own welfare and that of their family." Von Economo describes three main types of the disease, but children do not appear to conform to any strict classification by clinical manifestations. The majority

appear to belong to his somnolent-ophthalmoplegic group, characterized by invasion of the oculomotor system, with lethargy and a moderate but quite atypical degree of fever. His second, or hyperkinetic group, shows sleeplessness, with a moderate degree of delirious excitement, often beginning with marked neuralgic pains, and passing on into somnolence. Lastly is the amyostatic group, which presents the clinical picture of paralysis agitans, *i. e.*, the Parkinson syndrome, with its characteristic posture, mask-features and tremors.

The following table summarizes the result of the examination of sixty-four children, the notes of which are sufficiently full to rank for tabulation. (Where no specific note has been made the condition has been counted as normal.)

It must, of course, be kept in mind in connection with the relative numbers and percentages given, that many of the children were presented to me on account of the prominence of certain symptoms, character changes, etc., so that the figures are to some extent loaded.

—		—		*Percentage* of morbid changes.
Intelligence reduced . .	30	Normal or unknown	39	43·4
Disturbed sleep rhythm .	55	,, ,, ,,	14	79·7
Marked irritability . .	49	,, ,, ,,	20	71·0
Character changes and moral defects	21	,, ,, ,,	48	30·4
Parkinsonism, tremors, bradykinesis, etc. . . .	30	—		43·4
Perverted habits . . .	32	—		46·3

Present state { Improving or stationary 56 / Deteriorating . . 13 } Total 69.

It will thus be seen that in 79·7 *per cent.* of the cases, most of which were examined from nine to twelve months after the acute stage of the disease, there was persistent disturbance of the normal sleep rhythm. It is not, however, the sleepiness by day which is the most distressing feature of this disturbance, but the noisy irresponsibility which destroys the rest of the whole household, and in the overcrowded homes from which many of the children come is a tragic curse to the over-burdened parents. "Sings and whistles the whole night." "Keeps the whole house awake singing and shouting." "In and out of bed all the time." "Cries all night, and sleeps all day." "As it gets dark you can't do nothing with him—anything for mischief." "If he makes the others cry, so much the better." "Goes raving mad at night, absolutely raving—gets out of bed and walks round the room and rubs his

head." "Whispers all night, gets out of bed, claps her hands, and sings till five in the morning. She's very nervous. It's shocking; she hears a pin drop at night." "Chatters to herself like as if she's fair silly." These are some of the verbatim reports by mothers. In other cases the excitement takes the form of impish tricks. One boy used to get up at night and break the crockery, and on one occasion locked his father out of the house till 3 a.m. Another very characteristic feature is the tearing of the bed-linen and clothes: "Tears everything up." "Rips his clothes to pieces." "Tears his shirt to pieces and ties them in knots." This form of destructiveness is noted in nine of my series.

The irritability takes various forms, from a mere quick resentment of criticism to sudden and violent outbursts of temper and spitefulness, which make them a potential menace to the safety of other members of the household; as may be gathered from the following sample-statements: "It isn't safe to leave her; she got a knife to her little brother and said she would cut his heart out." "Awful irritable with the other children." "Sets about his younger brother—he's got such a grip on him, we're afraid of him." "Spiteful to her sisters; she used to be such a nice girl, now she's quite changed." "He's got a vile temper now, and it is more than I can manage." None of the series has at present come before the Children's Court, but in six cases there is a history of thieving.

Again, a considerable number of children, 45 *per cent.* in my series, develop peculiar habits and tics. Nose-picking is perhaps the commonest, but perpetual sniffling, coughing and hacking and spitting are common, together with a peculiar habit of holding the finger to one nostril and blowing down the other. The original cause of some of these habits may perhaps be traced to the salivation and dribbling which is a frequent accompaniment of the disease (one woman stated that she went to bed perfectly normal, but that during the night she found the pillow soaked with saliva. This was the first symptom of her attack). One boy, æt. 15, constantly makes all the preliminary noise and movements of a sneeze, which were so disturbing as to necessitate his exclusion from school. This lad, who also keeps up a constant snapping of his fingers, had a considerable insight into his own condition, which is of interest. The sneezing movements he said he could control at will, but that they gave him a comfortable feeling "ever since the tea went down my wrong throat." Concerning the snapping of the fingers he said, "I get shaking my hand purposely. Before I was ill I used to think how nice it would be to snap my fingers at everybody, and now I can't stop." It appears that an increased suggestibility lies

at the bottom of these habits. One boy, æt. 10, with good general intelligence, who still continues after a year to disturb the whole house by singing and whistling, gave as a reason for this a definite feeling of euphoria—" I feel as if I want to walk about in the air, and in the Park ; I seem as if I wanted someone to bring something jolly—a gramophone." He does not sleep till morning, and cannot be roused. He commented on his mother's statement : " I got him up at half-past ten this morning, but it was half-past twelve before I could get him to put a boot on," with a remark, " I'm always so sleepy; I can't wake." This drowsiness is probably a true explanation of the difficulty, but the drowsiness may be replaced by a feeling of definite illness which passes off as the morning wears on. In only a small number of cases was there a history of definite hallucinations or delusions. One boy, æt. 9, returned from afternoon school apparently well. During the night he was " delirious," but got up next day and took a little boy into the neighbouring church saying that " there were tons of money, and he would see a ladder from heaven and if he climbed up it he would see Jesus." This may, of course, be mere exaggerated fantasy-building, based upon his recollections of Sunday-school teaching. Another boy, æt. 9, still occasionally believes that he sees his mother, who has been dead for some time. Two showed iteration-compulsions in connection with attempts to say their prayers. One of these, a boy, æt. 15, who also exhibited neurotic and introspective symptoms, stated that he sometimes had to say a hundred paternosters at a time, for, " If I said it wrong I used to have to go on saying them." The other boy, æt. 10, used to find he could not remember the words and sequence, and so continued to repeat his prayers again and again from the beginning.

Twenty-nine children gave evidence of some reduction in intellectual capacity since their illness. It must, however, be remembered that so much absence from school is often entailed either by the onset of Parkinsonism, the diurnal drowsiness or the intractibility in school that too much dependence must not be placed on these figures. In none of the cases examined was any profound reduction evident, and the disorder of behaviour was out of all proportion to the intellectual impairment.

The importance of these psychological disturbances lies in the possibility that they may throw some light upon the relation of the phenomena exhibited as late sequelæ of encephalitis to the mental disorders of adult life.

Von Economo argues that it is this disturbance of the sleep-wake rhythm which is likely to point the way to a proper understanding of the causal relationship of the pathological conditions to the

psychical phenomena and behaviour in encephalitis. The problem of sleeping and waking has, he says, been hitherto held to be physiological rather than psychological. This inversion of the sleep rhythm is not found in any of the acute psychoses, but there are certain interesting parallels between these psychical sequelæ and the Korsakow syndrome.

Though there is a strong superficial resemblance between the more advanced cases of Parkinsonism and the characteristic posturing of dementia præcox, and especially of catatonia, yet the mental state presents a very remarkable contrast, for in encephalitis the patient is usually, if not always, intellectually intact. After describing the complete autistic withdrawal which is found in dementia præcox, von Economo writes:

"*Now*, however, we come across the same psychical disorders as the sequelæ of a lesion of the central nervous system in patients who are psychically, or rather intellectually intact. On establishing touch with them, we notice with surprise that they are apperceptively and intellectually intact, they comprehend and hear everything, they appreciate the relations of their environment, they notice everything, are well oriented, and their critical judgment has not suffered" (p. 41).

The following notes of a case first seen by me on February 26, 1912, are of considerable interest as showing the development during adolescence of a transient schizophrenic state some years after the occurrence of an illness which had all the characteristic signs that we now recognize as encephalitis lethargica. In fact in my card-index, dated February 26, 1912, it is described as "a very interesting case of moral changes following encephalitis."

A. B—, born March, 1904. On July 18, 1911, after playing in the hot sun, became very excited and flew into a violent passion. On the following day he complained of double vision. Temperature 103·4°. A doctor diagnosed as "sun-stroke." In bed fourteen days. "He was now cross-eyed, and was unable to lift his eyelids, thereby having to look at everything sideways." Says "the pictures appeared in twos." "One week later, on being told he could not accompany me (his mother) to town, flew into a terrible temper, threatening to sit on the window-sill and get another sun-stroke. He was very tempestuous and occasionally would knock all the ornaments off the mantel-shelves." "He would, moreover, when in a temper endeavour to get upstairs and threaten to jump through the window." He used very bad language at times, and would suddenly switch off from this and assume an attitude of prayer. He also became addicted to masturbation.

After a year at the seaside and two years' absence from school he returned, and though a very trying pupil, showed very considerable mental ability. He left school at the age of 16, and began a business training, but after six months developed schizophrenic symptoms, showing marked autistic withdrawal and introversion. Says he felt inclinations to suicide. "I lost all interest in my work." His parents say that he was morose, and would spit at them; "at other times he would argue persistently at the slightest thing, and upon setting his mind on anything it was impossible to dissuade him." After eight months, largely spent at the sea, he began to improve, and is now a perfectly normal and healthy young man.

The phenomenon of lack of spontaneity and impulse is only present in a comparatively small number of children, and the

majority show a combination of mental apathy with momentary irritability, and with periods of excitement, together with a rapid onset of fatigue, and a drop in attention. They show a heightened susceptibility to emotional stress, an increased suggestibility, which in some cases gives rise to definite neurotic symptoms. The intellectual impairment seems to arise chiefly to an inhibition of volition and a failure of the exercise of self-criticism (Shrubsall). This failure may perhaps be correlated with the drop in attention, for, as James puts it, "the effort of attention is the essential phenomenon of will."

It is to my mind probable that in the theory of the evolution of the nervous system put forward by Head and Rivers we may find the key to a proper understanding of these volitional defects and the character changes of encephalitis. It will be remembered that these observers, from their clinical experience, and from the results of the experimental division of cutaneous nerves, have concluded that there are two distinct stages in the evolution of the nervous system, *viz.*, the primitive protopathic stage, with its pronounced affective tone and its resulting "all-or-none" reactions, and the later-developed epicritic stage, possessing a much more sharply-defined and localizing character, which enables more complex and discriminative response to stimuli, with corresponding modifications of behaviour. Rivers writes (4): "A character common to emotive reactions and protopathic sensibility in their immediate, and, as it were, unreflective character, the reactions of protopathic sensibility . . . are quite beyond the control which we normally exert over our reasoned movements, while the discriminative and reflective activities of certain forms of behaviour in man resemble in character these epicritic sensibilities with their associated activities." Rivers thus regarded the ordinary healthy mental state as one of equilibrium between the protopathic instinctive tendencies and the epicritic powers whereby they are controlled. His experience of war neuroses led him to see in these a suppression, or a removal, of the control exercised by the more recently developed epicritic capacities over the primitive protopathic characters. Now the child is primarily, and essentially, an individualist, or to use Lloyd Morgan's phrase, "a self of enjoyment," and it is only as he grows that the ceaseless stream of suggestions of social import raises in him a predisposition towards conduct, which is in conformity with the inhibitions and sanctions of the community in which he dwells. He only gradually becomes, in Aristotle's phrase, a "social animal" (5), and learns to subordinate or suppress his individual wishes and desires in conformity with the demands of his group.

This development of the gregarious life with all it connotes, and the altruistic attitude towards the other members of the group which it compels, is essentially an epicritic process. This two-stage evolution of the social life may be synthesized with our knowledge of the growth of the neopallium, upon which Head remarks: "In the light of this development of the neopallium, it may be stated that the aim of human evolution is the domination of feeling and instinct by discriminative mental activities." It may be remarked that in *post-mortem* examinations of fatal cases of encephalitis, although the cortex shows the least intense pathological changes, the grey matter of the brain as a whole is involved, while the basal ganglia and the mid-brain are the chief sufferers.

Now, experience in juvenile delinquency teaches that in many of the cases the basic causal factor is a regression to an earlier period of childhood, whereby a mental conflict is solved. There is, in other words, a suppression of epicritic control. It would therefore appear reasonable to suppose that the lesions in encephalitis, whatever their precise histological character, lead to a reduction of this epicritic control, which may be compared with the geological process of denudation whereby the younger sedimentary rocks are removed by the action of the various physical agents, leaving bare the ancient primitive rocks upon which they have been deposited. The tendency to an obliteration of the distinction between "*meum*" and "*tuum*," the all-or-none type of irritability, the complete disregard of the interests of others, manifested in the nocturnal orgies of singing and shouting, together with the failure of self-criticism, seem characteristic of a protopathic condition. Some confirmation of this view is supplied by the experiments on the effects of alcohol on emotivity, which go to prove that "in addition to an all-round raising of the threshold of emotional response, the effect of alcohol is to cause a regression to a more primitive, all-or-none or protopathic type of reaction"(6).

One fact in favour of this view is that the previous histories of some of the children who have shown moral changes reveal the fact that they have been "spoilt" or have previously shown some predisposition towards peccadilloes. In fact, in these, but by no means in all cases, their present condition appears to be little more than an exaggerated manifestation of a previous tendency. Any cause tending towards a reduction of volitional inhibition will naturally, in such cases, produce an increase in the general unmanageableness. It is clear that in the overcrowded conditions under which many of these children live, together with the general turmoil in the home and lack of quiet, the emotional stress is greatly intensified. That these children should, under such

circumstances, show increased uncontrollability cannot be a cause for surprise.

If these behaviour changes which supervene upon an attack of encephalitis are explicable as regressions, they then appear to fall into line with similar phenomena which have been observed to follow attacks of other acute infectious disease and disease of or injury to the brain (*cp.* Still, *Goulstonian Lectures*, 1902), as well as with the anti-social conduct which is so frequently noted as the result of juvenile conflicts and mal-adjustments.

In conclusion, a few words may be said on the subject of treatment. It is clear that, if the theory outlined above is correct, punishment can have little or no deterrent effect, but on the other hand may have disastrous results by the fixation of an anti-social attitude through the creation of a conflict or an inferiority-complex. In one week recently I saw three boys who had suffered from encephalitis charged with offences, one of whom had been committed to a Borstal institution, another to a reformatory, and a third to an industrial school for the feeble-minded. In none of these boys was there evidence of any marked intellectual deficiency. Under the more simple and regulated life of a special institution these, and all their fellow-sufferers from encephalitis, would, in all probability, re-acquire the necessary epicritic control and social outlook which is essential for ordinary life, without the stigma which magisterial action has put upon them. Institutions for their reception are one of the most urgent needs at the present time.

(2) Von C. v. Economo, *Encephalitis Lethargica*, pp. 42, no date.—(3) Diefendorf, Neurographs—Huntingdon Number, May, 1908.—(4) *Instinct and the Unconscious*, p. 48.—(5) *Politics*, I, 2: *ἄνθρωπος φύσει πολιτικὸν ζῷον.*—(6) W. Whateley Smith, *The Measurement of Emotion*, p. 138.

The Incidence of Chronic Infective Processes in Mental Disorder.(1)

By T. C. Graves, B.Sc., M.D., B.S.Lond., F.R.C.S., Medical Superintendent of Rubery Hill and Hollymoor Mental Hospitals, Birmingham.

[With lantern demonstration and photographs, etc.]

The study of chronic septic or latent infection has in general medicine and surgery advanced to such an extent that it is here only possible to deal with a moiety of the subject, and I consequently propose to deal principally with the chronic sepsis met with in the head and female genital tract, my object being to demonstrate and discuss a few of the clinical types met with in those parts of the body.

(1) A paper read at the Annual Meeting held at Birmingham, July 9, 1925.