Fundamentally, the problem as detailed above proves itself to be one not only beset with obstacles, but also presenting a promising outlook, and in order to ensure success must, of necessity, resolve itself into a question of mental hygiene, backed up by the vigorous support of eugenics and euthenics.

It would now appear that we have reached a stage of civilisation when social organisation is increasingly urgent, especially when one accepts the fact that social evolution is taking place at an extremely rapid rate.

All those who are interested in the question of early treatment must welcome with open arms the inauguration of the National Council of Mental Hygiene. This body has wisely elected to its executive men and women who, from their training and experience, are well qualified to undertake the intricate and onerous task of social re-adjustment in so far as it concerns the mentally unstable.

It is to their activities we shall look with great interest, and with the fervent anticipation that a really practical amd co-ordinated scheme will be formulated to improve and facilitate the working principles which at present exist. We thus hope that by their help out-patient clinics will be linked up in closer association with the executives of the general hospitals, mentally-defective organisations and after-care associations.

(For discussion *vide* p. 549.)

The Psychology of Epilepsy.[1] By Dr. E. D. WIERSMA, Professor of Psychiatry and Neurology in the University of Groningen.

IN this lecture it is my intention to illustrate the usefulness of the psychological conception of psychical disturbances by saying something about the *psychology* of epilepsy.

All phenomena of consciousness—perception, ideas, emotions, and volitions go hand in hand with material changes in the brain. Therefore we can distinguish between two groups of phenomena, *viz.*, a group of anatomical and physiological changes, and a group of phenomena of consciousness. Which should be regarded as primary need not be discussed here. It is a metaphysical question. When, however, both these constantly appear together, it is self-evident that there are two aspects to the normal and abnormal psychical phenomena. We can subject the material changes, which always go hand in hand with the psychological changes, to further analysis ;

[1] Being a lecture delivered in the Robert Barnes Hall at the Royal Society of Medicine, London, on May 24, 1923.

we can make a study of the phenomena of consciousness themselves, trace their interaction, and try to determine which are primary, which secondary.

If we knew all the anatomical and physiological changes accurately, and if in the same way all the relationships of the dependence of psychical phenomena were known perfectly, it would be possible to write a book with physiological data on the one page, and psychological data on the other page. The only difference between these two texts would be in externals, and not in essentials. They would resemble each other like two documents written in different languages, or two compositions, *e.g.*, one written in Greek, the other in Latin letters. Only he who knows both languages or both alphabets will be able to master them.

During the latter part of the previous century, and even now, the anatomical and physiological method has been pursued. So great was the certainty that in this way only could psychiatry progress—that a laboratory properly adapted to anatomical research could be found in every mental hospital. The psychiatrist himself spent most of his time examining the brain. Consequently the result has been a considerable addition to the knowledge of the structure of the brain. Neurology, diseases of the brain, etc., profited much by this; on the other hand the knowledge of abnormal psychical phenomena very little.

We know nothing of the anatomical changes as regards most psychoses. It is true that in the organic psychoses, constant changes are found, so much so that the diagnosis can be made with certainty at the autopsy. But even here the symptoms are but partly explained, because a number of psychical disturbances, such as delusions, hallucinations, etc., are not thereby explained.

Psychological examination has brought much more to light. The study of psychology has taught us to express the disturbances of the average within fixed limits. It has taught us the dependent relationships in psychical phenomena. In the very short time during which this method has been followed by some psychiatrists, it has been made evident that we can with certainty expect much of this method in the near future.

The psychologically trained psychiatrist has learned that in the different psychoses we have there expressed only disturbances of the normal conditions. The advantage of tracing the dependent relationships is made clear. For instance, in the study of hysteria this was formerly a disease in which all the symptoms were regarded separately without impinging on each other. Since we have learned that all symptoms are dependent on the constriction of consciousness, everything has become much clearer. Paranoia, like other

psychoses, reflects the image of normal conditions microscopically. The persecutory and grandiose delusions constitute a system found in normal life, as distrust and pride.

What is true for the psychoses in general is true of epilepsy in particular. It is, of course, quite unnecessary to go into details here as to the symptoms of epilepsy. Suffice it to say that epilepsy presents itself in many different forms. At one time we see scarcely perceptible disturbances of consciousness of very short duration, and at another time fully developed epileptic fits. Between these two extremes we have a very great number of intermediate forms. Disturbances known under the name of equivalents may be prominent. These are changes of mood, dream states, fits of confusion, etc. We can, therefore, distinguish between two groups of phenomena, namely, the motor and the psychical, both of which are nearly always present in every sufferer from epilepsy. The motor phenomena predominate mostly, but now and then the psychical disturbances mainly occur. To explain the symptoms of epilepsy, we must try to find the one primary symptom, on which both groups of symptoms are dependent. An anatomical disturbance has been sought. The researches of Kussmaul and Tenner brought Nothnagel to the idea of a convulsive centre in the medulla oblongata. Later on the publications of Hughlings Jackson gave birth to the idea that the fits are dependent on irritation of the cortex. This idea was strengthened when Fritsch and Hitzig, in 1870, proved the electrical excitability of the cortex. But in the first place no disturbances are found in these centres in genuine epilepsy, and in the second place only the motor and not the psychical phenomena could be so explained.

The question now arises whether psychology can elucidate matters. Few psychological examinations have been made as far as epilepsy is concerned, and these chiefly in epileptic dementia. We shall need to trace the relationship of the symptoms; we shall have to see which symptoms are primary, which secondary. We have seen that epilepsy can appear in different forms. However much the outer form may change, still there is one symptom which is never absent, although quantitatively it shows many variations. Whether the disease shows motor disturbances or psychical disorders in the main, these disturbances are always accompanied by a more or less definite loss of consciousness. Under this lowered degree of consciousness we understand a condition, where impressions of the outer world with or without ideation cannot, or only with great difficulty, enter the threshold of consciousness; where associations are not, or with difficulty, brought about; where synthesis is hampered—that is, a condition where the effectiveness, the clarity, and the alertness of conception of the content of consciousness are lessened.

That this absence or fall in the degree of consciousness is present in a complete epileptic fit needs no proof; also as far as the psychical disturbances—the equivalents—are concerned is shown clearly by what the patient says and does and his objective examination. The patient has a dull feeling in the head, thinks with difficulty, answers slowly, often the questions have to be repeated several times, and it is with difficulty the patient finds the correct answer. As regards his work also he is less productive. The constant appearance of this fall in consciousness with the fluctuation of all the other symptoms makes it probable that the fluctuating symptoms are dependent on this state of imperception.

If now it is really true that this restriction of consciousness has so much influence, we can put the following questions:

Does also the imperception which appears in normal and pathological conditions go hand in hand with epileptic phenomena?

And, further, what is the fate of the other epileptic phenomena, and are we in the position to prevent this imperception or to lessen its intensity?

As regards the first question, I should like to draw attention to several conditions.

To begin with we find the question answered in the affirmative as regards normal sleep. It is known that many people "start up" immediately before falling asleep, because of convulsions of the muscles of the arms and legs or sometimes of the whole body. These involuntary muscular contractions are often seen in little children and animals in the first part of their sleep. Further, more than half of the epileptic fits come on in the night and for the greatest part during the first few and last few hours of sleep. Gowers draws attention to these facts. It is also my experience that fits occur more frequently in the morning.

Besides these motor phenomena, hypnagogic hallucinations often make their appearance just prior to sleep. These are hallucinations of sight and hearing, which occur in many normal people, and which in origin remind us of the epileptic equivalents, and which occur in acute hallucinatory confusion.

In this connection the so-called paralogisms are also of importance. It often happens that in epileptic dream states the reply to a question put to a patient, although the question is understood, is not to the point. This phenomenon we find in different psychical disturbances. We have learned to judge the value of this by means of psychology, through finding out how it occurs in normal circumstances.

Before 1888 little value was attributed to this phenomenon. Moeli first called attention to it. He found that it was often noticed in prisoners and people

under arrest, who were trying to pass as lunatics and thereby escape punishment. He (Moeli) regarded it as a phenomenon of simulation, and in reality this is often the case. When we ask somebody, who knows nothing about psychiatry, to behave as if he were insane, his answers to questions will mostly be paralogical. Different researches and also experiments done by myself proved this.

In addition this phenomenon occurs in still two other circumstances.

A person who is busy with something which absorbs all his attention often gives a paralogical answer, and we can expect the same in conditions of normal drowsiness and dulness. On waking a person will often answer questions without proper deliberation, which answers given at hazard, are incorrect, and correspond in all respects to answers that are sometimes given in epileptic dream states.

In normal sleep, therefore, we see phenomena like those we find in epilepsy. But in abnormal sleep this is the case to a much greater extent. In *pavor nocturnus* the children start up in the first part of their sleep, are confused, have hallucinations, and are much afraid. After a few minutes they wake up or they fall into normal sleep. The following morning they have no recollection whatsoever of what has happened. The phenomena of dream-walking, during which all kinds of complicated acts are performed, correspond in essence with the dream-states of epileptics.

When dazed with sleep the process of waking sometimes lasts minutes and even hours, and not merely a few seconds as is the case in waking normally. Then a person is dull, cannot find his bearings properly, and does things incompletely. A grammar-school boy, for instance, made his appearance at breakfast dressed in slovenly fashion, read his Greek incorrectly at school, was sent home, and was not quite normal until later in the day.

All these phenomena of pathological sleep can be seen in people otherwise normal and without other signs of epilepsy; but in epilepsy these phenomena appear with much greater frequency and are mostly much more intense. As a matter of fact, these disturbances of sleep form a bridge between normal people and epileptics.

We see phenomena of epilepsy in other conditions where there is a loss of consciousness. During chloroform narcosis and unconsciousness from bleeding we often see convulsions. Not uncommonly acute alcohol poisoning is the cause of the first epileptic fit, and following an alcoholic bout there is sometimes a repetition of the fits. In all these cases during a temporary occurrence of a lowered degree of consciousness there occur epileptic fits, or epileptic phenomena in their most rudimentary forms.

The relation between epilepsy and loss of consciousness is made clearer by the relationship which in many respects exists between epilepsy and the phenomena of depersonalisation and *fausse reconnaissance*. By depersonalisation we understand a psychical

condition, making a sudden appearance and disappearing as suddenly, and where everything in the vicinity is comprehended vaguely and indistinctly. Often one hears the complaint, that although something is observed well, it is recognised with difficulty. Voices of other people and also of the person himself are heard distinctly, but are not recognised. It is as if the perceptions are established, but the associations which normally follow fail to appear.

In the same way the *fausse reconnaissance* is a suddenly appearing and disappearing state, where every present experience causes the impression that it is a repetition of a former experience perhaps ages and ages ago. The valuable researches of Heymans have given us a very clear insight into the essence of these phenomena, which can also make their appearance without the least pathological disturbances. By means of *enquête* it could be established with certainty that these phenomena can occur in two different psychical circumstances. In the first place as a result of fatigue of body and mind, of doing uninteresting work, of dulness and weariness, and also by taking more alcohol than is usual; therefore in conditions where there is a decrease of the psychical activity—a relaxation or decrease of perception. And in the second place as a result of preoccupation, as could be illustrated repeatedly by the *enquête*, when, for instance, attention is called to less interesting matters, while a person is busy with something quite different, and which absorbs his whole attention.

The psychical energy is then for the greatest part taken up by the interesting occupation and consequently very little is left over for the less interesting. For instance when a person must answer questions of little interest to him out of politeness, and all his attention is given to a conversation between other people, this condition is liable to occur.

The explanation of depersonalisation is not difficult. The impressions from the outer world, as a result of the low degree of consciousness and the decrease of perception, do not cause the associations to come about as quickly as is necessary, which causes a strange effect and disorientation. The phenomena of *fausse reconnaissance* must, as Heymans has pointed out with great clearness, similarly be explained by disturbed associations. Experience has taught us that impressions of some time back are brought to mind with more difficulty than those occurring in the daily surroundings. If, therefore, because of lowered psychical energy a recognition comes about slowly and with difficulty, we consequently have the impression of a recollection of an earlier time.

Now then, these conditions of loss of consciousness which I have pointed out bear a relationship to epilepsy in many respects. Everybody with the opportunity of making a careful study of those

suffering from epilepsy, will gain the experience that the phenomena of depersonalisation and *fausse reconnaissance* are much more common than is the case with normal people. And their relationship with epilepsy is brought much clearer to light, because at one time they precede a fit in the form of *aurœ*; and then again they occur in great numbers between the fits, especially when these fits occur in series. One of my patients said: "Repeatedly I have the feeling to have experienced or to have observed long, long ago, what happens around me now. This is the case especially during the times I suffer from giddiness." Another patient often experiences moments during which the surroundings seem foreign to him, during which he has the feeling as if dreaming, during which voices of acquaintances sound foreign to him. These conditions can occur independently, but very often they are a warning to the patient of a fit that is coming on.

These observations, however, are not new. Different writers have pointed out the great frequency with which depersonalisation and *fausse reconnaisance* go hand in hand with epilepsy. Kraepelin, after he has described the phenomena of *fausse reconnaissance*, says: "In a very clear way this disturbance is seen here and there in pathological conditions, especially, in epilepsy, in relationship with the fits."

Leroy has selected different cases from the literature, of which cases I will quote just two, one according to Jensen and the other according to Sanders. In the first case the patient complained that immediately before an attack of *petit mal* he had the feeling as if he had seen the doctor, the nurse and the surroundings before in exactly the same way as then, and in the second place it is related of a patient who exhibited the phenomena of *fausse reconnaissance* very often during three periods of eight to ten weeks, while at the same time the fits of *petit mal* occurred much more frequently.

Gowers also says that sufferers from epilepsy often complain of a feeling of queerness, which appears suddenly.

These examples are very clear. It may be accepted that depersonalisation and *fausse reconnaissance* and the fits can have the same fundamental cause. But there are still stronger and more convincing proofs, which I shall have the opportunity of pointing out.

In the first place the question arises whether in pathological circumstances other than epilepsy depersonalisation and *fausse reconnaissance* can occur, and if then the relationship with epilepsy is to be seen. It is self-evident that in psychopathology the origin of the phenomena is the same as in normal people, because although we may be inclined to separate disease from health for practical purposes, theoretically we can nowhere draw a sharp boundary. For these reasons we may expect that in psychical disturbances depersonalisation and *fausse reconnaissance* can occur as a result of preoccupation and imperception. In reality this is the case, because in melancholia, where the patients are overpowered by strong emotional ideas, and in dementia præcox and psychasthenia, where we see a lowering of the degree of consciousness, we come across these phenomena.

It is interesting that in diseases like psychasthenia, for instance, where exacerbations of a lowered degree of consciousness occur, not uncommonly epileptic fits occur. It is not difficult for me to prove this by means of cases from my own experience and from literature. A patient of about 40 years had been nervous from childhood and exhibited many psychasthenic phenomena in the form of fears and obsessions. The thought, for instance, what would happen if all the coal in the world were used up would disturb him for times at a stretch and cause him to have sleepless nights, while at the same time he knew the uselessness and absurdity of such thoughts quite well. In addition to this he often had phenomena of *fausse reconnaissance*. Later on typical epileptic fits occurred in this patient.

Another patient who similarly suffered from obsessions, but in quite different form, later on had epileptic fits. As regards this patient especially, phenomena of depersonalisation occurred. Janet points out this relationship by means of a number of important observations.

All kinds of variations can occur. Sometimes the psychasthenic and epileptic symptoms occur together, at one time the one more prominent, at another time the other. A patient with the obsession to kill her mother, or the reproaches that she had done so, and feelings that she would harm everybody, at the same time suffers from typical epileptic fits and giddiness, during which she often had strange sensations: she found everything strange; it was as if she had never seen the most common objects. But it also happens that epilepsy is present for years from childhood onwards and psychasthenic phenomena make their appearance only later on, or *vice versa*, that epileptic fits gradually develop out of obsessions, compulsory ideas and fears. And further, Oppenheim points out the existence of fits in psychasthenics closely resembling those of epilepsy, the dementia remaining absent, and their disappearance on the treatment of the psychasthenia.

From the above, therefore, the relationship between the conditions of loss of consciousness and epileptic fits can be clearly seen. Experimentally also this can be demonstrated, but on this point I shall say something after I have answered the second question, namely, "What is the fate of the rest of the symptoms of epilepsy, if in one way or another we are able to prevent the occurrence of imperception?"

Many patients can repress a fit if they are warned by some sign or other, or by an *aura* of long duration. Some patients are able to do this by concentrating their attention on their surroundings with all their strength, by accounting for everything that happens in the vicinity, and others again are protected by being addressed forcibly or by strong bodily stimuli. One of my patients often could prevent the occurrence of a fit by walking about quickly or by giving his whole attention to the objects and people in his vicinity. In another patient the mother could get the same result by continuous forcible address: "Be careful, observe the people, keep bright," etc., or by pinching the girl's arm. A teacher who had a boy suffering from epilepsy in his care, could make the number of "absences" considerably less by giving the boy mental arithmetic sums to do. I would also remind you of ways of preventing fits, which have been long known, such as tying a string round a limb where the *aura* is felt, making use of table-salt, smelling salts, etc. In all these means, we have to do with stimuli which forcibly distract the attention. By preventing the loss of consciousness all other symptoms of the epilepsy remain absent.

Although one is often successful—and this I know from my own experience—in preventing the fits in this way, often, however, one is not able to prevent entirely the loss of consciousness, even when one is successful in combating the motor symptoms. Often the patients for some time still complain of dulness in the head, of inability to think. They observe their surroundings indistinctly. The above-mentioned girl, in whom the mother could prevent the fits for some time still made the complaint that the surroundings seemed strange to her, that she could find her way there with difficulty. Another patient had the

same experience, but further added that the voices of acquaintances and his own voice also sounded strange to him. It was as if the voices came from places far distant. These observations are of importance, because in them we see that, while all the other symptoms of the fit can be combated, there sometimes still remain some phenomena of depersonalisation and relaxation of perception. The fall in the degree of consciousness therefore is the most resistant. In literature we have records of such-like experiences from the hand of many authors. Concerning this, Oppenheim, for instance, says that we are often successful in suppressing the fits, but that it is not always pleasant for the patients, because they afterwards often complain of feeling out of sorts, of pessimism, headache, irritability and giddiness. Janet also tells us that he has seen many such cases. He quotes a case of Hascovec: a man who for a considerable time already had been suffering from epilepsy, felt while he was sitting in the theatre that a fit was coming on, and this fit he was able to prevent by fighting it off determinedly. For some time afterwards he remained in the strange psychical condition, where he had the feeling as if he was dreaming, he heard and saw everything, but the surroundings seemed foreign to him; he did not seem to grasp matters.

I am of opinion that the foregoing gives us the right to answer both questions I have previously put.

In each momentary decrease of consciousness we can come across the psychical as well as the motor phenomena of epilepsy. The condition of lowered consciousness, in normal as well as in pathological states, as in sleep, abnormal sleep, chloroform narcosis, alcohol intoxication, bleeding, psychasthenia, furnishes the proof for this opinion.

And when by some means or other we are able to prevent this imperception in epileptic fits, all the other symptoms remain absent.

I want also to point out that experimentally the relationship between the loss of consciousness and the other symptoms of epilepsy can be demonstrated. From the fact that depersonalisation and *fausse reconnaissance* occur much more often in epilepsy than in normal people, it has already become clear that, in this disease, besides the usual fits, there also exists a great tendency for instantaneous loss of consciousness to occur. There also often occurs in many sufferers from epilepsy an eclipse of short duration of the field of vision, or a bluntness of stimuli of sound occurs between the complete fits. An observation of Störring fully confirms this opinion. He was examining the muscle sensation of a patient when the latter said: "Wait a moment; my mind must get clearer."

This tendency is not to be found in epilepsy only, but can also be demonstrated in normal people. When a person is put to do mental work in a certain time—for instance, difficult arithmetic sums—and if we register the time taken for each sum separately, or if we let him carry out similar movements registered on a cymograph, then there are regular fluctuations to be shown in the time taken for this mental work and for the movements. In normal people they can be seen clearly, but in sufferers from epilepsy I found them greater in number and degree. Conditions of imperception make their appearance much more clearly with just perceptible than with strong stimuli. Very weak stimuli cannot be observed continuously. For instance, if one attentively listens to the ticking of a watch removed from the ear such a distance that it can just be heard, one at first hears the ticking clearly, but after a while hears nothing more of it. If one remains

listening the sound is heard again after a shorter or longer period, to disappear and appear again later on.

These fluctuations of perception, the so-called "attentiveness fluctuations," repeat themselves incessantly. The perception often disappears slowly and suddenly reappears again. The registration of these periods of perception and imperception offers no difficulties in normal people. We can record these times correctly enough on a cymograph by pressing an electric button. But there are some objections against this method of experimenting with patients, firstly because it is rather fatiguing to pay attention to a scarcely perceptible stimulus continuously, and further because a certain amount of education and interest is necessary. Besides, the experimenter has no control over the correctness of the reactions. Therefore I have sought for another method, in which these mistakes do not occur, or if they do, then only in a small degree. If we let the person experimented upon observe the weakest stimuli now and then instead of continuously, we can do away with the mistakes mentioned for the greatest part. Much more exertion is required in paying attention to the registration of the decrease and increase of a weak stimulus continuously than is required to react on this stimulus when it appears only now and then. Further, a reason for making faults is excluded by this method thereby, because it is much easier and asks for less deliberation.

How, now, does the reaction of sufferers from epilepsy compare with that of normal people? To trace this comparison I examined a number of epileptics and normal people by means of scarcely perceptible stimuli of light and sound. I cannot go into details here as regards the methods of experiment. The experiments were done during several successive days, and with the same person during the same time each day. The duration of each experiment was ten minutes; the number of stimuli to be reacted on were about 200. I shall limit myself to giving brief results of this research. Fluctuations of perception will have the result that these very weak stimuli sometimes do not pass the threshold of consciousness, because of which the reactions remain absent. These states of imperception can be of different duration, so that not only one stimulus, but often also two, three, four, and more successive stimuli are not observed. Besides, very slight conditions of loss of consciousness, which do not accompany cessation of stimuli, will show themselves in the lengthening of the time of reaction.

It would take up too much time to give a detailed account of the results here. Suffice it to say that in epileptics many more stimuli are not perceived, that the duration of the states of imperception is much longer, that the reaction times are much longer, and exhibit greater fluctuations than in normal people. Besides, it could be established that all these phenomena occur more often in epilepsy on days during which the fits occur frequently.

What are finally the results of the psychological aspects and researches of epilepsy?

I believe that we can take it as true with certainty that in epilepsy a much greater inclination exists for the conditions of loss of consciousness than in normal people. Clinical observations have shown this for states of imperception as depersonalisation and *fausse recon-*

naissance, and experimentally also this can be demonstrated by the greater and longer incapability of perception of the weak stimuli and by the lengthened reaction times.

In my opinion we see in these phenomena the very simple forms in which epilepsy can reveal itself. But more complicated phenomena, as convulsions, confusion, etc., we may regard as results, as secondary phenomena of the states of loss of consciousness, because we have seen that the same phenomena also make their appearance in physiological conditions of loss of consciousness.

In depersonalisation and *fausse reconnaissance* we thought we saw links between epilepsy and normal conditions. Is this now also the case with conditions of imperception which we could demonstrate experimentally? It appears that this question must be answered in the affirmative, because here also could be shown that these conditions, similarly as depersonalisation and *fausse reconnaissance* in exactly the same form, must at one time be regarded as normal psychical manifestations and at another time, again, as symptoms of epilepsy.

But there are more points of conformity, because it has been shown that the means used for combating the epileptic fits exercise a very great influence over the power of perception. We know that since the introduction of bromides in the treatment of epilepsy about 70 years ago no remedy has been known to be more active as a preventative against fits. But in addition it has been shown by experiments on normal people and patients, that by the use of 2–3 grms. of sodium bromide the capacity of perception is raised considerably. By experimenting with scarcely perceptible stimuli this could be demonstrated.

Another question which remains to be answered yet, is whether the known epileptic characteristics do not show themselves in rudimentary form in healthy people; in other words, whether, within the limits of health, there does not exist a type of people in which an indication of these phenomena can be seen.

Experimental examination has taught us that epileptics neglect impressions from the outer world more than normal people, and that they react more slowly. We can therefore say that they are more absent-minded and slower in their actions.

These, then, are the fundamental disturbances of the epileptic character from which all the other disturbances take their origin, so it is to be expected that in normal absent-minded and non-active people qualities will be seen which resemble those of epilepsy.

A research in this direction was made by my colleague Heymans and by myself. A *questionnaire* put us in possession of the most divergent character qualities of 2,523 people. A request was made

to all the medical practitioners in Holland to give us information about the character qualities of persons well known to them by means of filling in replies to certain questions, 90 in number. One of the objects of our research was to increase our knowledge of the normal heredity, and therefore information was requested about the father, mother, and one or more adult children. It is impossible to go into details of the replies to these questions here. Suffice it to say that in this way we got accurate information about the mental activity, the emotionality, the psychical after-effects, the intellectual qualities, the tendencies, etc., of all these persons. The replies to the questions about mental activity made it possible for us to draw a line between the active and non-active persons. Another question was concerned with a greater or lesser tendency to absent-mindedness. In this way it was possible to separate the absent-minded non-active persons from the lists. Besides this I had the opportunity of collecting character qualities of 48 epileptics before they came under consideration for hospital treatment. This information was given by relatives, who were associated with the patients daily. In this way, therefore, we can compare the character qualities of normal people with those of absent-minded non-active people and with those of epileptics.

It is known that the people with an epileptic character, apart from the slowness of their actions and their greater absent-mindedness, can be differentiated from normal people intellectually, morally, and emotionally.

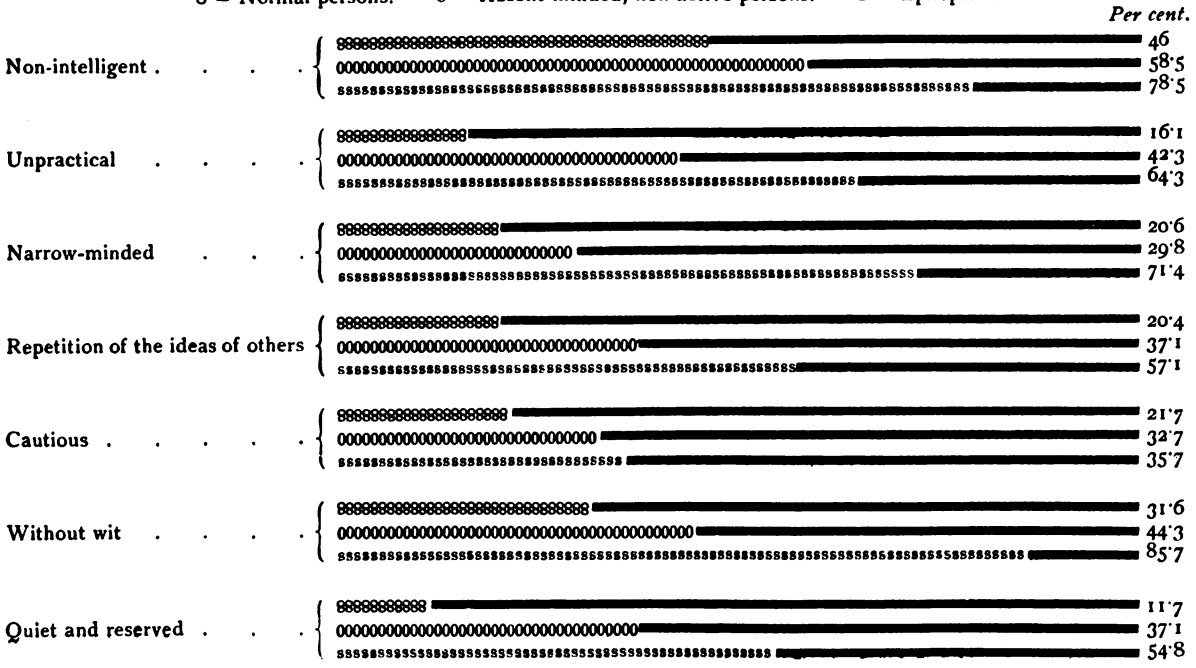
In the accompanying figures I put the percentages of the character qualities of normal people, normal absent-minded non-active persons and of epileptics next each other. The normal are represented by (g), the absent-minded non-active by (0), and the epileptics by (s). It is clearly seen that absent-minded non-active persons show a great relationship with epileptics. In all intellectual, moral and emotional qualities they form a transition between normal people and the epileptic.

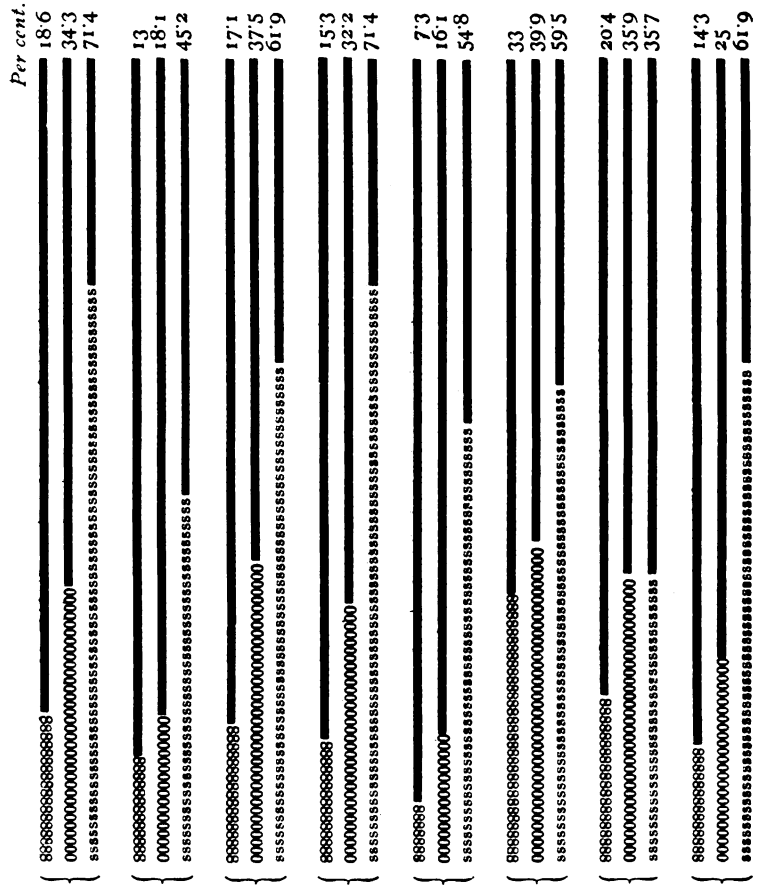
Intellectually this is clear. In their ability for understanding matters, practical actions, narrow-mindedness, their tendency to repeat the ideas of others, the inclination to express themselves guardedly, to be reserved, in the measure of their wit, from their verbosity and round-aboutness and the repetition of the same story, in their capacity for observation, in their aptitude and memory, they occupy a place between normal people and epileptics.

With the moral qualities it is also the case. This can be seen in the conflict between their thoughts and actions, their self-satisfaction, their affected actions, the tendency to talk about themselves, and their flattering utterances.

SYNOPSIS OF REPLIES TO QUESTIONNAIRE.

8 = Normal persons. 0 = Absent-minded, non-active persons. s = Epileptics.





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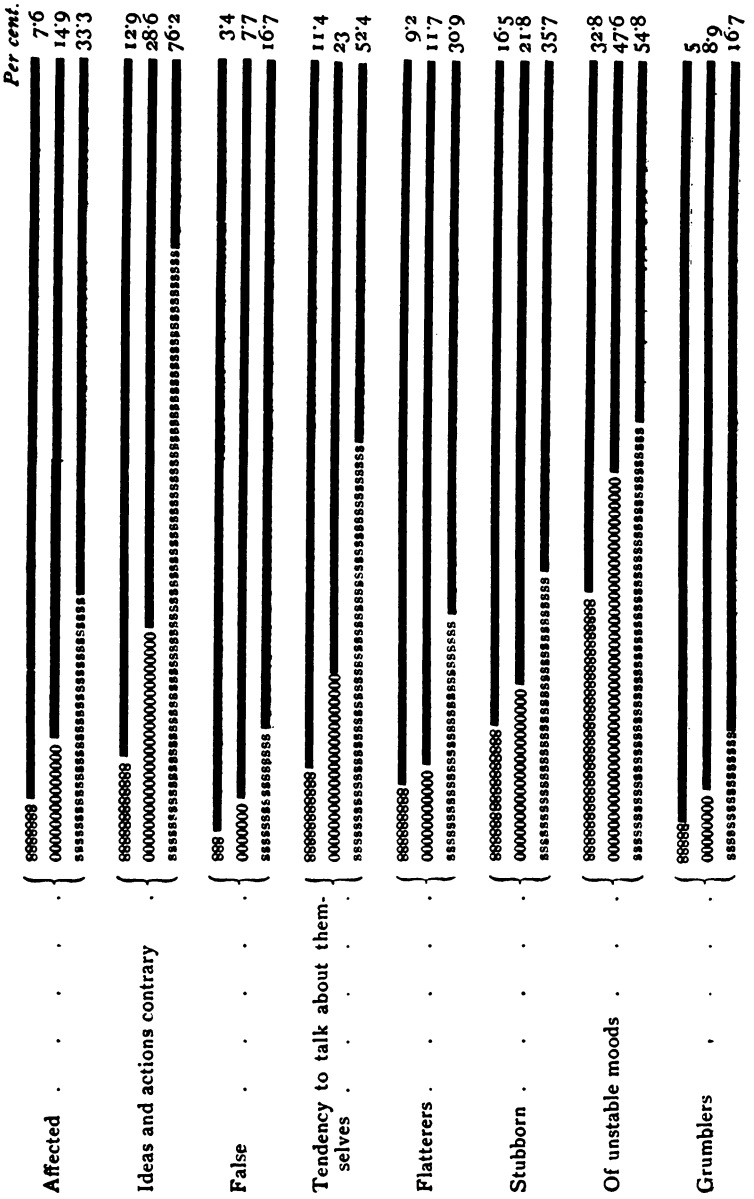

Also the emotional qualities show this transition, such as the stubbornness, the irritability, the changes and sadness of mood, and the tendency to grumble.

As a result of this research we may therefore accept it as a fact, that within the limits of health there exists a type of people which shows the character qualities of the epileptic much more clearly than the average person. The primary qualities are the greater absent-mindedness and the less activity. On these, all the other character qualities are dependent.

It is very clear that some qualities are dependent more on the absent-mindedness, others on the non-activity.

A person who is absent-minded and, therefore, wanders with his thoughts, will receive and retain impressions from the outer world with difficulty. He will feel ill at ease in the company of others, and will be preoccupied with the same thoughts more than others. The intellectual disturbances will therefore be dependent especially on the absent-mindedness.

On the contrary, the moral disturbances are promoted by the non-activity. The non-active person will be governed much more by desires and succumb to temptations much more than the active person, who has his thoughts centred on one or other object continually. The restraint caused by directing the attention to what is happening in the outer world is wanting in the non-active people, and therefore their thoughts will be concentrated upon themselves. The egotistical tendencies, talking about themselves, the affected actions, have a close relationship with this.

I want to conclude with the hope that I have been successful in making clear that imperception occurs in a greater measure in epilepsy than in normal people.

Because a clear relationship between all epileptic phenomena on the one hand and all epileptic character qualities on the other hand with imperception can be shown, it can be taken as true that, from a psychological point of view, this imperception has to be regarded as the fundamental disturbance of epilepsy.

The Surface Tension of the Serum in Anxiety Psychoses.[1]

By Clement Lovell, *M.C.*, M.D.Lond., Pathologist, Bethlem Royal Hospital.

In dealing with the surface tension peculiarities of the anxiety states I will only dwell very shortly on the physical aspects of the problem. If two bodies are brought into proximity, then each body

[1] A paper read at the Annual Meeting held in London, July 11, 1923.