the epileptic, but I firmly believe that the world should be drawn upon for the elucidation of the scientific aspect of this condition.

I appreciate very much the confidence which the Association has placed in me by choosing me for its presiding officer during the year.

Unflagging effort along the broad lines laid down at the inception of the work of our Association must be continued by each member until the goal at the end of each pathway is reached, bearing in mind at all times that "it is great wisdom not to be rash in what we have to do, nor to maintain too obstinately our own opinion." (A. Kempis).

A CRITICAL ESSAY ON MENTAL TESTS IN THEIR RELATION TO EPILEPSY

BY

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(From the Psychopathological Laboratory of the New Jersey State Village for Epileptics at Skillman.)

Psychology is a discipline of undue hopes and uncritical scepticism. Just at the present time the optimistic point of view is gaining the upper hand. It has been a hard battle, which in forty years time has elevated psychology from a cinderella science domiciled in one room at the Leipzig University to palace-like institutions such as for instance the Harvard Psychological Institute, and what more, has caused other branches of science previously either indifferent or opposed to psychology, to become
desirous of allying themselves with the latter, — chiefly the pedagogic, medical, and the legal sciences.

It is in reality wonderful to trace the development of psychology. In this short period of time, not only has theoretical psychology arrived at a high standard of development, cultivating the knowledge of fundamental psychological experiences and forwarding the analysis of complex psychological processes by resolving them to their elements, but it is now preparing ground for the differentiation of applied branches of psychology. The psychology of children, pedagogical and criminal, religious and medical psychology have now begun to earn their own living.

Medical Psychology has even begun to split itself into two sub branches: psychopathology and pathopsychology. Although psychopathology is a broader term and although as a rule, a pathopsychologist must be primarily a psychopathologist, the ultimate purpose is different. While the first one tries to utilise the psychological experience in medicine, especially in psychiatry, the latter tries to illuminate normal processes by comparing the normal with abnormal phenomena, thus getting a better knowledge of the former. It is like importing raw psychological material into the Medical Realm and exporting in exchange the same substance as a wrought product into Psychology.

Unfortunately, the unexpected and unequaled development of psychology has intoxicated many up to now critical, cautious minds of skillful psychologists, has made them impatient to get "results" and draw practical conclusions. What is worse however, psychology is obliged to pay a severe penalty for once being a domain open to everybody. While no one in physics for instance or che-

1) The proof of interest which normal psychology is taking in abnormal psychology, is shown by the necessity for a special magazine for psychopathology, "Die Zeitschrift für Pathopsychologie", which has just made its appearance. All eminent German psychologists are contributors; France is represented by Janet and Bergson, American scientists by Muensterberg.
mistry would dare to enter into serious research work unless armed with a thorough knowledge of theory and practice, psychology is open to everyone. No licence is required, or rather a short course at some laboratory, a few books, suffice to qualify as an expert in psychology. It is however still worse. While a chemist trained in organic and anorganic chemistry would never dare to enter into research work in biological chemistry without making himself perfectly acquainted with biology, a psychologist seems justified to investigate the pathological phenomena of psychology without becoming acquainted with pathology. I do not need to add that even the one year psychologists aspire to utilize the fragments of their psychological knowledge in different other branches. The result of such a procedure is disastrous, as I pointed out in one of my previous papers with reference to Wundts criticism on Meumans work in psychological pedagogics¹), which he described as pernicious to the “entente cordiale” of psychology with other branches of science. No doubt, that at the present time, enthusiasm about psychology is great, but even nowadays the more sober scientist, especially in medicine, is beginning to retain a cool reserve. There are enough enthusiasts in psychology; I am selecting the more ungrateful part of the pessimist, who will try to put a scientific brake of critical consideration even there, where success seems to be beyond doubt. I am doing this however in the spirit of the highest optimism, that there are at the present time points of true cognition, which will be able to stand any possible epistemological criticism and that, helping to correct available mistakes, the union of psychology with medicine will be an ultimate one.

One of the most sensational psychological attainments is the so called Binet Simon test chiefly introduced and modi-

fied for use in America by Goddard. 1) I must assume that the reader is acquainted at least with the general outlines of this test and knows about the excellent research work made by Goddard in normal children. I shall nevertheless in order to make clear the genesis of the test, sketch an outline of its original purpose. The French psychologists Binet and Simon prepared this test primarily for the use of normal children, in order to gain a more exact and uniform basis for placing children in the corresponding school grades. The necessary assumption for the arrangement was the uniformity of conditions, under which a child of a given age was supposed to be. A child for instance, of the age of nine, should have according to the arrangement of French schools such and such knowledge; the tests were made a posteriori with a selection of the highest percentaged questions, answered by children of a given age. Having a practical point of view in mind, this test has been of the greatest value in France and could be easily applied as a routine examination of children in any country, with the necessary modifications. Although native ability plays an important role in such a test, the training is an essential condition of the child’s success. If a child failed, and was retarded for instance two years the Binet test would diagnose the case as “retarded”, without giving the cause for retardation. Such a retardation might be due to mental dullness — an inborn condition — or to lack of previous educational experiences, to sickness, adenoids, psychopathic timidity and nervousness or other more accidental causes. It is even possible that one should attribute to a child which is only one year behind his norm according to the B. S. test an especially

L’intelligence des imbéciles, ibid 15, 1909.
H. H. Goddard. — A measuring scale for intelligence; the training School, 6, 1910. The Binet Simon tests of intellectual capacity, ibid 5, 1908.
good native mentality, as he in spite of some cause (epi-lepsy for instance, as we shall later have the opportunity to see) has fallen no more than a year behind.

We thus see, that difficulties arise even in dealing with normal children and that even in public schools, this test would cause teachers who lack a psychological or more important even, a medical knowledge, to commit graver mistakes with the Binet Simon test, than they otherwise would. I can however say, that every teacher — provided he is of the same sex as the child —, would be able, when properly instructed, to apply the test under one condition, that the answers should be recorded verbatim, scored with the aid of a stop watch. The real problem, however should begin at this point, and every child having the record of failure, that is, every child having the same opportunity as the others, which would fail, should be turned over to a psychopathologist (with medical knowledge) who would have the task to investigate the cause. Thus applied, the Binet Simon test even in it’s present form would be of great value, as it would lead to the individualisation of pedagogical attention and would result in proper segregation. Such a procedure however, would under the present arrangement of the test, although pedagogically interesting and valuable, be of little use to the scientific phase of the problem.

The apparent success of this test with normal children led the French psychologists to apply it as primarily divided for pedagogical purposes and for the use of normal children, to abnormal ones. They did not even stop at the using of this test upon children, but thought is possible to apply it to adults as well. The necessary hypothesis which led them to such an application is a psychogenetic point of view, that imbeciles reach a certain maximum of deve-

1) Cmp. case 7 on page (insert the december of page for case 7).
lomptment and then stop for ever and that therefore, an imbecile of twenty five years may be compared with a child of five, if such an individual fails in the test devised for a child of six. *Kuelpe*¹), justly questions this point of view, claiming that one has no more right to compare imbeciles with normal children of a certain age, than to claim that dwarfs are physically children who did not develop above a certain age. This point of view is indeed not new. *Wildermuth*²) tried to adapt this point of view to idiots, but failed to convert others to his made of thinking. Let us consider the case of an imbecile of eighteen, whose mental age according to the *Binet Simon* scale is six years. As a rule such a low grade imbecile is far below a normal child of that age regarding adaptability to new surroundings, or ability for learning or being trained. He may exceed on the other hand a normal child in the knowledge of money, counting etc., which knowledge he has acquired during the twelve years of additional life. Finally, the sexual maturity will disclose a new life of inner psychic experiences unknown to the child. The same dissimilarity exists between a child and a dwarf, who is rather a caricature of an adult's body; in like manner the imbecile's mind is a caricature of a normal adult's mind.

This objection to a grading like the *Binet Simon* could be overcome, if instead of years, a system of grading independent of age would be substituted. For instance, a given complex of tests would indicate a certain grade of development. The same complex with graded difficulty would indicate a higher degree of mentality. Such a grading would necessarily be a quantitative one in most

¹) *Kuelpe*, Psychologie und Medizin, Zeitschrift für Pathopsychologie; 1. Band, 2. und 3. Heft. Compare also an article of Revault D'Allonnes, in Journal de Psychologie normal et pathologique, 1911, in which article he strongly opposes this parallelism.

²) Compare *Kraepelin* Psychiatrie Vol. 2, paragraph on idiocy.
of the tests. The Binet test has some of its tests arranged in this way, such as for instance the impressibility test for words and digits, unfortunately without a systematic arrangement. In such an arrangement the grading would also be artificial, but it would do away with the confusion, especially among laymen, that imbeciles are children with a stunted development.

Another strong objection to the Binet Simon test is the haphazard arrangement of the questions. We miss an appeal to specified mental abilities, like memory, perceptibility, linguistic expression etc. for each age. The child of six years for instance should repeat sixteen syllables. This test does not appear again before the age of twelve, in which the child is supposed to repeat twenty six syllables. Is it of no vital interest, how quickly this ability develops in children between the age of six and twelve? If it is true that a child of eight is able to reproduce only two facts from a story once read and a child a years older six facts, is it of no interest to know, whether this great improvement is due to the rapid development of the childs memory, to a better understanding, or to an ability for linguistic expression. Why again is this test discontinued for the following ages? Is there no age limit, in which a child not only could but should repeat this story correctly and exactly? It is a so called "Aussage" test, which has gained lately great interest for itself in psychopathology. These examples are but a few out of many ones.

All these objections are of psychological character. There are others of more formalistic character, to the effect, that some questions are too easy, others too difficult for the pertaining age. As I myself have not worked with normal children and as besides, all workers along this line have

\[1\) A separate article regarding the evidence test as comparative study of normal and abnormal, gained by the help of a moving picture device, will soon follow.\]
recognized this fact and made systematic objections and suggestions, there is no need of dwelling on this subject.\textsuperscript{1)}

Hence, there are many objections to the Binet Simon test even regarding its application to normal children, those arising in its application to abnormal children must necessarily be increased.

Imbecility is a collective diagnosis of many conditions not only dissimilar regarding etiology but also in its manifestations. It is often difficult to differentiate, where the imbecility ends and the normal dulness begins. Psychiatry calls imbecility an abnormal state of mind with a manifestation of inferior intellect, a state which is either of congenital origin or which had its origin in some pathological conditions occurring in earliest childhood.

The latter conditions are strictly taken cases of dementia, it is however impossible to distinguish, especially from an anamnèses taken later in life, such a condition from infantile imbecility if it existed, as the impressions gained before the age of four are as a rule entirely forgotten. If for instance, a child becomes blind before the age of four, there is no difference between his blindness in later life and that of a person with congenital blindness. Both are unable to have any visual sensation or representation. If a person however becomes blind after the age of four, he is able to have visual images, be it only an idea of darkness. It is in like manner with imbecility. It is a defect, a minus, which descriptively could well be explained by the word amentia\textsuperscript{2)}, in opposition to a process of a diseased

\textsuperscript{1}) Compare O. Decroly and J. Degand. La Mésure de l'intelligence chez des enfants normaux d'après les tests de Mm. Binet et Simon; nouvelles contributions critiques. Archives de Psychologie, 9, 1910.


\textsuperscript{2}) The term Amentia which indicates the absence of mind, as the opposite to Dementia indicating the process of elongation from (once a normal) mind, is a term for a long time in use in the english

\textsuperscript{10}
mind, dementia. A priori we must say, that there will be a vast difference in those conditions, and we can perceive that a conventional test like the Binet Simon test would not be able to make any differentiation, as it is theoretically feasible that an imbecile, reaches a certain degree of development, whereas the dement deteriorates apparently to the same point, both resulting in the mental age let us say of six.

The one diagnostically important point in imbecility is the impossibility of any marked improvement and the lack of the capacity for gaining knowledge by experience. The memory and an ability for gaining even an extraordinary mechanical knowledge of facts can however be intact. I remember seeing in Rome N. Y., at the Custodial Institution, an imbecile of a very low grade, who was able to recite the capitals of all the states and knew a great many historical data. These facts he repeated however, in a parrot like manner without inner understanding 1). To make a diagnostical point of calling imbecile all those who are three years retarded in the Binet Simon test, means to create a new diagnosis, only valuable in its application to the Binet Simon test. There is no doubt, that there is a possibility of training an imbecile along some lines, where mechanical knowledge or memory is concerned, so that an individual whose grading was dependent on mechanical terminology; unfortunately Meynert usurped this term for a diagnosis of a disease hitherto known as Acute Confusional Insanity.

As Amentia in its specialized term became acclimatized in the last few years in the american psychatrical nomenclature and is in use in some of the newest handbooks on psychiatry (for instance in Paton’s book) it is better in order to avoid confusion to abstain from the usage of this term in its original meaning.

1) Another still lower grade imbecile had an extraordinary musical talent being able to play correctly any piece on the piano which he had once heard. In our own institution we have a boy of ten whose mentality is not higher than a high grade idiot and who also shows a great musical ability. Another patient has a marvelous memory for data and names.
appliance and diagnostication, after a certain training would test perhaps no more than a year or two behind his age after a week training thus reaching the degree of backwardness or dulness. As on the other hand, a dementing process may set in slowly in a child (juvenile paralysis, dementia praecox, impossible to perceive in their initial stages, without mentioning epilepsy) a previously normal child might be classified as an imbecile. As we previously mentioned, imbecility is a well defined although not always an easy diagnosis and the Binet test is not adaptable to the making of a diagnosis of imbecility. Pedagogical psychologists too easily lose track of the fact, that imbecility is a term of pathology and not simply a gradation of mental ability. Such a diagnosis should be left entirely to a medical psychopathologist. We do not make a diagnosis based on the tests alone but on the whole clinical picture which must correspond to the finding of the test. If we find sugar in urine, this fact is not sufficient to make the diagnosis of diabetes. We can however speak of a condition of Glycosuria; it may be accidental, due to an unusual amount of sugar consumed or to some transitory pathological cause. The pathologist making the test would simply state the fact without making a diagnosis. Again, the finding of diphtheria bacilli in the throat does not necessitate the person having the disease. A diagnosis is a logical process of elimination, of narrowing the premises to only one possible conclusion. Therefore, not only this test, but any test what so ever, should not solely be taken into consideration, but a person's reaction to the necessities of life, his behaviour under unusual circumstances, and finally one should

1) In other words, the treatment of a subnormal child could be well left in the hands of pedagogical experts, the abnormal one belongs to the care of physicians. On the other hand however even in the treatment of subnormal children, the teacher would do well to consult a mental expert and vice versa, a physician could not be successful in the development of abnormal children, without the cooperation of pedagogues.
study the surroundings among which he was brought up in other words make a careful study of his life. It is not right to make a diagnosis of imbecility from the comparison of for instance a child of lower race with a higher one. It may be inferior as to race, but be up to the mark, for its own racial standard. This caution is especially imperious in America, where children of so many races and nationalities are brought into consideration.

After this critical synopsis, we may now turn to our own investigation. The Binet Simon test has been used on all patients at the New Jersey State Village for Epileptics. It was applied in about three hundred cases by Dr. Wallin who recently published the result of his investigations in the "Transactions for the National study of Epilepsy", and it has been revised and supplemented by me. Three hundred and ninety eight cases were taken into consideration, three hundred being adults, and ninety eight children under sixteen.1)

Wallin found, that 5.7% of all epileptics were idiots, 27.3% were imbeciles and 61.5% were morons, (only slightly feebleminded) in other words, not taking into consideration the grades of feeblemindedness 5.7% were idiots end 88.8% were imbeciles, and hardly 5 1/2% were either

1) Dr. Wallin made the tests especially valuable for a statistical investigation because of the fact that he not only registered the answers to the questions devised for the given age but he would apply all tests to each patient. I followed his example.

In making statistics, he took as a differential age between "child" and "adult", the legal distinction: the age of 21. This distinction does not seem to me justifiable. From a psychological point of view there is no real difference between a boy of 21 and 22 years. No doubt that there is not a sharp line drawn where the mentality of the child stops and that of the adult begins. As puberty however causes a decided change in a persons physical and mental appearance, the age of sixteen, in which all children of both sexes normally in our climate gain sexual maturity, thus becoming "men and women", was selected as the dividing line, inasmuch as the Binet Simon test does not test over the age of 12.
retarded or normal, the actual test being only applicable up to the age of twelve, as the test originally devised for the thirteenth year and later transferred to the fifteenth, is not reliable and much too difficult. Judging from his conclusion, Wallin realized, that there is an essential difference between epileptic and "amented" imbeciles. By comparison with Goddard's results he thought to ascertain that, the mind of epileptics is higher than that of simple imbeciles, as Goddard's list of distribution shows that in almost the same number of Vineland patients 19.2 were idiots, 54.0 were straight imbeciles and 26.0 were morons. The majority of patients were imbeciles while the majority of epileptics at Skillman were morons. My reasons for not subscribing to this classification, are evident from the above. Epileptics are not imbeciles but demented. It is a problem in itself to find out how many epileptics are congenitally feebleminded and how many are demented, having previously a normal mind. The best proof against such a classification is the fact, that, while in the series of tested imbeciles, who remained in the institution, the diagnosis would probably be constant, the same epileptic material would show year by year a lower grading, that is if the diagnosis were based only upon the Binet

1) "It is apparent that there is a striking difference between epileptic degenerates and feebleminded retardives in the matter of intelligence. The intellectual superiority of the epileptic defective is conspicuous." Transactions of the National Association for the Study of Epilepsy. 1911, P. 36.

If Wallin understands by the superiority of epileptics over imbeciles their congenital potential ability, I should agree with him. It is however selfunderstood that if the inborn defect in some epileptics is due to epilepsy, in other words if those epileptics who are also congenitally mentally defective would only be taken into comparison their superiority would be at least very problematic. As the psychological comparison of these, with those otherwise imbecile is only permissible as I will have the opportunity to sustain in the latter part of the paper, Wallin's assertion can only be interpreted in the sense that epileptics are in the greatest majority not congenitally ajebleminded.
Simon test and were made an arithmetical procedure of summing up the tests correctly passed and the failures. A striking example of this will be shown later. ¹) The diagnosis therefore would be variable. However, in order to compare to some degree the mentality of dments it would be permissable to make a diagnosis allied to idiots, to imbeciles and to morons. The analogy however would be but very superficial as between the mind of a demented and amented person there are just those differences, which make it worth while to insert the psychological probe as deep as possible, in order to study these essential differences. Wallin’s assertion, that the mind of epileptics is different, is not sufficient and the confusion of welldefined termina unjustifiable.

To statistically study the percentage of failure in a given test, is of promising interest regarding the finding out of the direction either of the defect or the deterioration. Let us first review the mental characteristics of chronic epileptics as they have been clinically observed, in order to ascertain, whether the clinical observation is parallel with our findings. We can disregard the mental manifestations due directly to seizures and only review those symptoms which are apparent in the periods free from seizures.

The consciousness at these times is clear, the patient is able to recognize his surroundings and react sensibly. The process of thinking, however is greatly prolonged, as association experiments can prove, their interest is steadily narrowing, finally confining itself to their own person, making them egotistic, peremptory in their desires and hypochondriacal. It is therefore hard to gain their interest in anything outside of their own bodily wellfare. Their conversation and mode of expression is stereotype. The same okes are made day by day, the same arguments put forward; the are unable to give a straight answer, but lose themselves in their narratives, in circumstantial details. No new

¹) See case 6 on page.
experiences are gained, or only in great limitation. However an epileptic, in opposition to other forms of deterioration is able to utilize his previously acquired knowledge, although in narrowed limits.

This short description is not necessarily true of all epileptics. Many of them suffer but little from their affliction, at least in their intellectual sphere, others again show a residual permanent impairment of memory and reach a degree of dementia, which is equivalent to the lowest degree of idiocy; this latter is often the case, when epilepsy starts in childhood.

We at once, from the above given clinical picture are able to perceive the difficulties in the application of the Binet test to epileptics. A steady, tense, attention and interest is an essential condition even in normals. To gain it in children is an art in itself, "the child must always be won", "..." at all events get down to the level of the child, according to the instructions of Goddard. To do this an experience with children and a knowledge of child psychology is a conditio sine qua non. The same is true of epileptic or other psychic abnormalities. A knowledge of their psychology, the knowledge of different psychopathic manifestations, bearing no reference to intelligence, is essential to the understanding and the applying of the test. The general psychomotor retardation which in many cases increases to mental inhibition, a priori excludes the consideration of time limit, which is assigned for normal people as applicable to epileptics. We know for instance, that the retardation of thought process, and even an inhibition is not necessarily due to defective intellect, and while this symptom is most pronounced in Manic Depressive Insanity, patients suffering from this disease do not undergo any loss of intelligence. This difference is very essential. While there are many conditions of the mind which resemble each other the ones are temporary and capable of recovery, the others such as dementia imply a permanent damage to the mind.
This factor therefore calls for the modification of the Binet test application, as not the time required, but the modus of work must be taken into consideration. Another obstacle in epileptics is their lack of previous educational advantages. Most of the children committed to the Village can neither read nor write, thus making it impossible to apply many tests, which are based on that elementary knowledge. As a rule epileptics with severe convulsive manifestations are not admitted to public schools and seldom get a home education: They are, for this reason, entirely unprepared to solve any mental problem. Finally, some of the failures are due to the lack of interest of analphabets on the whole, and institutionised patients in particular. To these failures belong questions of age and date. In taking histories, in my capacity as physician at the Danvers State Hospital for the Insane, I had the opportunity to observe that for instance the illiterate Irish or Jewish informers were utterly unable to give either their own exact age or that of their families. If they knew their age within the limit of five to ten years, it was the best they could do. If therefore, patients especially adult women are unable to tell their age, it should only be recorded as a failure, when an absurd answer is given. For instance, when a person of thirty would give his age as sixteen or fifty etc. The same remark is applied to the knowledge of the date. We are well aware, how easy it is to lose track of the exact date even in or own cases, just as soon as we cease reading newspapers, writing letters or otherwise fail to do something which habitually recalls to us the date. If therefore a patient has an idea of the date, it should suffice for the judging of his intellectual ability, whether or not be is capable of grasping the meaning of the same.

Let us direct our attention to table. The Binet Simon test as devised in 1908 is printed there with the percentages of failures, for each of the individual tests. For the tests 54, 55 and 56, the percentage of correct answers are recorded, as these tests are the ones most
contested and criticized as much too difficult being either too specialized or too much dependent on previous schooling. The writing tests Nr. 23 and 33, were not taken into consideration at all, as too many patients were illiterate. The other tests which implied a knowledge of reading and writing, were only checked as failures, when the given individual failed in spite of his knowledge of writing and reading. Our list includes 300 adults (above 16 years of age) and 98 children up to the age of 16 inclusive. The age limit of 16 was taken for the reason that the 16 year old individuals could still be classified under the circumstances as retarded to the age limit of 12, comprised in the Binet Simon test.\(^1\) The number 98 decreased with the higher age, as some of the children were under the age of a given test. For the age 6, therefore the percentage was calculated from the number 95, age 7, from the number 92, age 8, from 90, age 9 from 87, age 16, from 84, age 11 from 83, age 12 from 70, and for the last three tests, the percentages were reckoned out of 57 individuals under 17, while the number of 300 adults was constant.

The percentage of failures for the test 1, — 24, is between 4.5% as a minimum and 30.6% as a maximum. However, the test Nr. 15, calling for a repetition of 16 syllables which is passed normally by children of six years, shows a percentage of failures as high as 65.3%; the repetition of 5 numerals (test 25) has another high percentage of failures, 43.3%, only 2/3 as high in comparison with the previous one. Beginning with test Nr. 43 the percentage of failures is over 50% with the maximum of 82.4% for the repetition of a sentence with 26 syllables, followed by a close second of the test 50, which is a test of the repetition of seven digits. Other tests which show a percentage of failure of 80% is the test for free associations (Nr. 49—80.1%) and the test for inference (test 53, — 80.3%).

By comparing the percentage of failures in children, we

\(^1\) Compare former foot note.
shall see that with the exception of test Nr. 15, the percentage of failures in children is higher than in adults, in the tests 1 to 37. From the test 38 onward, the proportion is reversed, as the adults failed oftener, that is with the exception of test 41 and 42. In the tests 26, 35, 37 and 44, the difference is less than 3% in favor of adults, while in test 15, it is in favor of the children.

More than 50% of our patients failed in the test for impressibility; regarding the relative percentage of children and adults, the latter show a somewhat higher percentage even in the test Nr. 15 intended for 6 year old children. In the test Nr. 52, the difference is considerable, being 11% higher. In the repeating of 5 numerals the adults have a somewhat better record, while in the repetition of 7 digits, 16½% more adults failed to respond. In remembering six facts from a story once read, there is also a higher rate of failures by 8% to the disfavor of adults.

The clinical observation of epileptics regarding memory defects is thus confirmed by the Binet Simon test. On the other hand, our statistics show, that this defect is acquired and not inborn. Children under 17, although many of them of very low mentality undoubtedly of congenital character show a better record regarding impressibility, even in a test designed for children not older than six years, while in a somewhat harder test the difference is striking. This indicates that the memory ability in Epilepsy deteriorates with age. The impressibility for digits, if there are no more than five is somewhat easier for adults; this is easily understood as adults are more familiar with numbers and as on the whole, this test is easier than the repetition of long sentences.

The most interesting percentage of failure, is the correct arrangement of weights in their order of difference of 3 grams. No more than 21 out of a hundred adults were able to do this test correctly, whereas 45 out of 100 children succeeded. This test is quite easy, and a normal person can do it without difficulty. Among those patients
who failed, were men and women, who otherwise responded to most of the other tests. As there is a very large difference in the ability to perform this test between children and adults to the disfavor of the latter, we must hypothetically assume therefore, that some condition develops in epileptics with age, which interferes with the ability for recognizing smaller differences of weight. It is not a matter of intelligence, as we observed those patients to fail, whom we might call practically normal. On the other hand, much more defective children were shown to succeed. As the recognition of weight is due to inner tactile sensations of the joints and muscles, our hypothesis would be that a degeneration of that sensibility sets in. We could speculate, that the state of tension and convulsive movements, clonic and tonic contractions due to seizures, interfere with the normal functions of the joints and muscles. We reserve for a later period an exhaustive study of the sensibility of epileptics in that direction.

The retardation of thought process, found to be customary in epileptics is supported by the high percentage of failure in test 47, and its preponderance in adult patients is shown as well. The deterioration in this regard is progressive with the duration of the disease. In the testing of more than 150 patients, I remarked, that the number of repetitions is very large. This perseveration is however otherwise noticeable. While giving to patients sentences to repeat, if the interval between sentences was not long enough, the patient, especially of a lower grade, was apt to repeat either partially, or entirely, the preceding sentence given him. The same is applied to numbers. This fact, which will also be an object of special investigation, confirms the clinical traits mentioned above.\(^1\)

\(^1\) A casual observation made by one of the assistant physicians at our institution (Dr. Gisela von Poswik) may possibly throw an interesting light on the etiology of perseveration as being possibly a retardation of transmission of stimuli to the sensoric brain centers.

A boy of thirteen extremely dull and probably congenitally defec-
The power of combination and concentration is in epileptics also a subject of deterioration. Here also our observations correspond to those made in clinics. It is an effort for epileptics to concentrate their minds; in order to solve test 45 or 53, an interest in the test is necessary. An epileptic dement, becomes more and more passive and slow in thinking, which again explains a better record in children, than in adults.

The worse record of adults in some other tests is more of external character. For instance, the higher percentage of children, in test 46, may readily be explained by the fact, that whereas the latter, who are admitted to the State Village receive school education at our own special school, the former adult patients, who never or for only a very short time, have attended school, naturally have greater difficulty in the above named test. The success is therefore chiefly a matter of training.1)

In the easy tests devised for smaller children, the adults show by far a smaller percentage. As we have seen that the more difficult the tests relatively were, the better solved they were by children, it proves, first, that the response of many individuals, is dependent on training received in

tive with severe serial epileptic seizures, and whose mental examination revealed perseveration in associations to a high degree, was tested regarding his olactory sense. When the valerian solution was given to him to smell, he was unable to tell what it smelled like. When menthol was given, he first said "I don't know". After the withdrawal of the bottle he said, "it was like white candies". The essence of cloves was then given, to which he answered "it smells like white peppermints". Finally when Asa Foetida was demonstrated he promptly said, "it smells like red roses; (the essence of cloves the stimulus given him before Asa Foetida, has really a slight resemblance to the smell of red roses). A few seconds after the withdrawal of the bottle with the disagreeable ingredients, the latter came to his consciousness which was markedly evident from his facial expression which showed disgust. The same patient showed an identical peculiarity regarding gustatory sensations.

1) This proves that it is justifiable to maintain schools in epileptic institutions.
later life, and second, that persons if feebleminded do develop within certain limits during later life, as undoubtedly, among our patients there are quite a number of those who besides being epileptic are also congenitally feebleminded, and who even in spite of epilepsy are able to develop along certain lines involving knowledge, while deteriorating along other lines regarding e.g. memory. Thus it is natural, that the ability to perform elementary arithmetic is acquired in later life and that they learn to differentiate money in the outside world, while children, who perhaps were brought into custodial care, when four or five years of age, have never had even a chance to see a quarter or half a dollar. The days of the week and the months of the year is a knowledge mechanically acquired by most adults. That it is only mechanical one can easily satisfy oneself, by asking a feebleminded person, who has promptly and faultlessly recited the months, how many months there are in a year. If the imbecile is of quite low grade, he will not be able to answer at all, or will promptly give an irrelevant and mechanical answer such as I had an opportunity to record as answer of a sixteen year old imbecile girl; "every month has 30 days with the exception of February, which has 31." The middle grade imbecile will answer this satisfactorily, but will surely fail to answer the following problem: if somebody in November asks you to return three months later when would it be? As previously stated an imbecile will fail upon this question, in the greatest majority of cases. In order to eliminate a simple computation, it is well to choose an example, in which the question would imply some month after December, as many imbeciles who might be able to add three months to May for instance are unable too proceed when they reach the last month of the year. Decroly and Degand, in their criticism of the Binet Simon test, raised the objection that these tests were too mechanical, but could be modified. It seems to me, that the proposed suggestion is quite an adequate one. If the child is unable to repeat the months,
this ignorance should not be recorded against it. As the proof of intelligence is the ability to utilise the acquired knowledge, it seems to me that the proposed modification meets this problem.

The statistics which I gathered, can also be exploited in a pathopsychological direction, as the statistic of the responses of epileptic dementes, may readily be a helping guide to eliminate inappropriate tests. The proposed change of the months and days of the week, should also be utilised for normal children. Generally speaking, the individual application should be carefully given and in each doubtful case where there is a disproportion of answers in a certain direction, the question should be raised, whether the case is not an incipient one of some process of deterioration. In this way, many cases of brain disease, could be recognised and cared for in their early stages, as for instance, in hereditary syphilis, which process could be checked in positive cases, after the presence of lues had been ascertained by the Wasserman test, by the application of the proper treatment.

After applying the Binet Simon test to a few hundred patients, I have become convinced that the idea of the test is a most ingenious one, and is a great step forward in the determination of mental conditions. As a physician in an insane hospital, I was often confronted, as well as my colleagues, with unsurmountable difficulties, in the defining of a patient's mental condition. Again and again, the range of information was proven worthless and a good history of previous life was not always at hand. The necessity for such tests is especially urgent for the use of forensic psychiatry.

The Binet Simon test is a first step. To be of scientific use it needs long experimenting with; before its perfection,

1) How little actual knowledge has to do with native ability, was shown in the statistical study made among normal laborers in Berlin. The same was observed from statistics gathered in the British Army.
it should not be let out of the hands of specialists and should be confined to laboratories. I personally owe great enlightenment to this test and faulty as it is, it has helped to detect many conditions in epileptics. My criticism, therefore was a benevolent one and because I am anxious to see it in general use, I am also desirous of having it reach a perfected state, as far as it is possible. It is a long way to satisfy scientific criticism. It is from the psychologist, working with normal people, that we expect the improvement to come, and we, who are engaged in psychopathological research, will gladly support this purpose by the adapting their experiments to our own human material.

We have previously said however, that the Binet Simon test will not help to decide in individual cases, whether or not the case is demented or imbecile. Other tests, have been devised and originated mostly in America. A very simple but very adequate one is the Goddard's Form Board test. It consists of placing ten blocks of various shapes into corresponding holes. The points of interest, are the time required and the method of procedure. Referring to the Binet Simon test I spoke of the impossibility for drawing absolute conclusions from the time curve. In normal individuals, it is permissible to draw inferences from a time curve; as applied to the abnormal, the objection from a methodological standpoint is that one cannot work with two variable unknown quantities. This is true in arithmetic, it is true of any investigation. The one norm must be therefore, the assumption of uniformity of one condition. Besides, as Healy says: "it would seem quite apparent that for estimating mental ability the method pursued in this task is of much greater value than the actual time. Probably all would acknowledge that a trial method, where the subject proceeds intelligently from one apparent possibility to another, even though a relatively long time is

1) It was designed by.

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consumed, will not necessarily indicate lack of native ability.\(^1\)

All our patients were tested with the Form Board test. Dr. Wallin made a summary of this test regarding time, finding a parallelism between de mental age ond the durati on of procedure. The relation was inversely proportional; the lower the mental age, the longer the time. The curve, which he worked out shows a rapid fall from the age of three to five, a somewhat slower fall between the ages of five and nine and a very gradual descendance from this point on. The average time required for the ages three to seven (or imbeciles according to his classification) is 100.7 seconds; for the ages 8 to 12, (morons) only 19.5 seconds; and for those who passed the Binet Simon test devised for the age 13 was 14.18 seconds.

I do not know, what were Wallin's conclusions regarding these facts as he has not published a paper relating to this subject. To me it indicates only the confirmation of clinical observation about psychomotor retardation. As this symptom increases with the duration of the disease and with the degree of deterioration, it is obvious that the length of time would increase with the lower mental age. An abnormally prolonged time will therefore always indicate mental inferiority, but not native ability.

Of much greater importance is the method of procedure. This test is easy and only low grade imbeciles completely fail in it, while the medium grades although they make errors, finally succeed after many trials.

A few examples will illustrate this point:

1. A normal, very bright boy of three years succeeds in 46 seconds with one mistake, placing a similar but smaller block into a larger hole. He rectified his mistake, and is able to perform the test correctly when sufficiently attentive. His

\(^1\) Tests for Practical Mental Classification, by William Healy and Grace Fernald. The Psychological Monographs Vol. 13, Nr. 2.
method of procedure was to select a block and then by comparison with the shapes of the holes, find the corresponding one. He compared only by visual comparison, not placing the block into the hole, unless subjectively positive that it was the correct one.

2. An epileptic, 36 years old, male, very poor schooling. Has been in the institution since May 1911, and is one of the lowest grade patients. He answers questions half absentmindedly, and it is hard to obtain any information from him. He grades about 4, in the Binet scale. His record in the form board test is as follows. Time, 1 minute 38 seconds. Places correctly every block in the corresponding hole, in a manner similar to the above cited child.

3. An epileptic girl of 15. Father, alcoholic and feebleminded, mother epileptic. Has three out of four brothers who are epileptics; mother and 2 brothers also patients in the institution. B. S. age 6 1/2. Never attended school, but took care of household which was naturally in a state of terrible neglect. Is attending the Kindergarten class in our schools, where very slight progress if any is noticed. She is however anxious to learn to write in order to be able to compose letters. Has severe convulsions, but with free intervals of months. Has been in the institution since October 1911.

First trial: gave up after a minute attempt. Proceeds in the following manner: takes a block and tries to fit it in an hole which looks the most like it. Tries impossible moves; tries to force a square block into a round hole. Persisting doing so, turning the block from all sides. Is unable to overcome a slight obstacle. She tries for instance, to insert a half moon shaped block into the right hole, but does it upside down. Instead of turning it over, she gives up attempting altogether. It is very characteristic, that after trying the test many times, on different days, she is unable to succeed at the first trial. Even when the process is demonstrated to her, she is unable to grasp the idea.

4. An eight year old, brother of former patient. B. S. age 5 1/2. In school, attentive, making a slow but steady progress. He fails in the first trial, tries one impossible move (insertion of a star into a cross hole). He succeeds on the second trial with the aid of close comparisons. On the third trial, he has entire success. Several days later he is able to perform the test slowly and correctly.

5. A 6 year old, younger brother of Nr. 3 and 4. B. S.
mental age 5.5. Makes good progress in school. Performs the test correctly on the first trial in 36 seconds.

These examples are very instructive. A normal child as young as three years, works intelligently and succeeds in his attempts. An entirely demented patient who hardly grades four years, is able to proceed intelligently though slowly. On the other hand a girl of 15, whose whole life points towards a deep congenital defect, is utterly unable to perform the test. She does not learn by experience, and her way of proceeding is characteristic of her school record. Her brother, who grades a little higher is able to succeed with difficulties; the younger brother, but slightly retarded succeeds well. In spite of the fact, that all these children show about a uniform mental age, the grade of their mentality is very different. This test corresponds in its results, to their school standard, while according to the Binet scale, one would expect them to be of similar ability. From this test, I anticipated the results of their progress in school, which anticipations were justified. On the other hand, a man of the mental age of four, is slow but successful, which makes the assumption justifiable, that he is demented, having once however possessed a mentality of a much higher order than that shown by the Binet Simon test. He therefore would not be classified as an imbecile bordering on idiocy.

We thus see, that the Board test is very helpful in differentiating the grade of feeblemindedness, where the B. S. test would fail, and also in cases where the dementia is very marked, it is of great value in differentiating the

1 It is perhaps interesting to notice the peculiar improvement of native ability with the order of births in this family. The brother who is one year younger than Nr. 5, is at home, not epileptic and is reputed to be of especially bright intellect. He even graded somewhat over his age in the Binet Simon test made on him by our Field Worker. The youngest child however, although only two years old has epileptic seizures.
latter diagnosis from a congenital low grade imbecility or idiocy.

The two next tests, which we began to apply in our examinations of patients, were the construction puzzles A. and B., as described by Healy in his Pamphlet recently issued. I must refer the reader to it, as the idea of the test is only entirely comprehensible with the help of a photograph of the puzzle boxed. Healy outlines the idea of the test as follows: "this test brings out perception of relationships of form and also the individual's method of mental procedure for the given task- particularly his ability to profit by the experience of repeated trials, in contradistinction to the peculiar repetition of impossibilities characteristic of the subnormal and feebleminded. groups." Test A., is readily and serviceably made of scroll-saw wood. The inside measurements of the empty rectangle are 4 by 3 inches. The subject is offered the test, with the separate pieces irregularly disposed and is told that the space can be exactly filled up, if they are put in correctly . . . In the test B. it is absolutely necessary that the parts be exactly made so that they are interchangeable throughout . . . The test is presented to the subject, with the pieces well mixed up. He is told that if the pieces are put in correctly they will exactly fill all the spaces, and he is to see how quickly he can put them in their proper places. In this test, again, it seems to us that a trial and success method, can not be regarded as at all derogatory to native ability, but it does seem clear that in such a procedure, the constantly getting of one's self back into old impossible situations is, on the contrary, evidence of poor ability. The shrewdest method pursued is to eliminate the small pieces which can only fill up certain definite spaces. Some of our subjects, deliberately do this. . . . Time, again, in this test is hardly to be considered so important as estimation of the method pursued. . . . We find that most of our 12 years old children do puzzle A in time ranging from 12 seconds to 2 mi-
nutes. . . . Most of our 12 year old children, are successful in puzzle B in from one to three minutes."1)

These tests have been tried on about 50 patients and belong to the routine mental examination of all new admissions, as they proved to be of extreme value in the differentiating of native ability from deterioration. The Puzzle B is not an easy one, but that it is not too difficult is proven by the fact, that the three years old boy previously referred to succeeded without help after some 6 minutes of experimenting. It was very interesting to watch this child at work. He was not yet able to use the rational method of elimination or reasoning that for instance, the square and block is not meant for the round and shaped hole; he learned however by experience and did not repeat this move again. At no time did he try the inserting of a square shaped block into a round shaped hole, a move again and again repeatedly tried by imbeciles, children, and adults. Another advantage of these tests is their game like appearance; one can gain the attention of abnormal children, who are otherwise so distractable that a test composed of questions would not meet with success. Sometimes an abnormal individual will fail to complete this test; one must however encourage him and occasionally it is well to demonstrate to him the whole method of procedure. Imbeciles will fail in spite of a demonstration.

It will be of interest to try this test on a few hundred normal children using the scoring devised by Dr. Mary S.2) Heyes and also apply it to our patients. It is possible that we shall be able to find out, whether there is a certain standard of procedure in work at certain ages. The results will be easily obtainable and comparable for the reason, that success is almost entirely independant from schooling, which might be of help as a matter of economy

1) Ibid page 14 to 17 incl.
2) Ibid page 17.
of time due to routine practice, but would never be of help in concealing obvious defects. From the Form Board test to Puzzle B, all of which are constructed an the same principle, there is a grading of difficulties and whereas a middle grade imbecile could succeed finally with the first two, he would be sure to fail in the third test. Those patients however whose mental ability had deteriorated from epilepsy, even though their mental age was below the norm, were successful with the test and their procedure was intelligent. In our further investigations we shall apply most of the tests mentioned by Healy in his pamphlet, as we are fully in sympathy with the idea and purpose of these tests which are to eliminate the matter of training and education to the smallest degree thus making them applicable to educated and uneducated people alike, as well as to the deaf and dumb.¹)

All the tests hitherto discussed, were tests, which either like the Binet test disregard the analysis of intelligence into specialized abilities or where the analysis had to be made by the examiner from complicated psychological data. Bechterew and Wladysko suggested a series of tests which are intended to reveal special mental traits and their abnormalities. Bechterew is an advocate of, as he calls it, the objective method of investigating the psychic or rather neuropsychic sphere. His idea, is to introduce a number of tests, which being easily adapted both to normal and abnormal individuals have quantitative objective measurements.²)

The new tests referred to in his article are methods

¹) I succeeded well with two deaf and dumb patients who are in our institution.

²) Bechterew, Die objektive Untersuchung von Geisteskranken, in Zeitschrift für Psychotherapie und medizinische Psychologie (also in Traite Internationale de Psychologie Pathologique).

The description of the tests which we used with illustrations are in Bechterew's and Wladyskos article "Beiträge zur Methodik der objektiven Untersuchung von Geisteskranken", Zeitschrift für Psychotherapie, 1911, Vol. 3, Page 87 to 109.
relating to the quantitative determination of external objects thus testing the ability for concentration, which is essential for success in the given test; also the investigation of the capacity for observation, the ability to note differences of detail, the ability for reproduction, which is in this incident, the recognising of familiar objects from pictured illustrations and finally the ability for visual synthesis.

In order to test the first ability, a test of 6 pictures was arranged representing colorless circles and numbering 9, 16, 22, 32, 45 and 63 circles consecutively in each picture. The object of the test is to make a mental count of the circles. In this case the time required for accomplishing the test is of as much value as the error. A similar test is one in which pictured objects are substituted for the circles. This test however seems to me to be somewhat dependant upon previous training and should therefore only be used after the determination of the native ability, as it is more or less a test for determining the deterioration. Whe should not expect an imbecile to meet with any success, for as a rule, the latter is unable to acquire an ability for counting over certain limits which knowledge he can only mechanically utilise.

The test for observation and comparison is much better suited for our purposes. A simple picture with a few details is shown and exposed to the subject for a certain length of time. A series of pictures follow each composed of a slight added detail. In a similar manner, for the reversed procedure, another series of pictures is used with a decreasing number of details. It appears that in this latter procedure, from a psychological point of view, it is much more difficult to perceive the disappearance of small details.

The test for visual imagination consists of a series of pictures with the outlines of a familiar object. The distinctness of outline is gradually increased from a vague hazy representation to a definite outline in the 6th picture.

The last test is for the revealing of the ability for visual
synthesis, and it consists of an illustration of the scattered parts of an object, a lamp for instance, comprising the chimney, wick, stand etc. This picture is shown to the subject who is expected to state the name of the object which the combined details would represent.

Regarding the first test, the mental counting of objects, Bechterew found that the time of counting was not only prolonged in all forms of mental disturbances, but that some patients made errors even in the first picture. (Especially so in cases of Dementia Praecox and General Paralysis.) No data regarding epileptics were given by the author nor have I made any investigation regarding this point. 1)

The test for observation and construction was tried on about 40 of our patients. The very demented patients were only able to notice a difference in pictures Nr. 1, and 5, or 6. Low grade imbeciles were entirely unable to observe any difference whatsoever. A few epileptic demented tested by Bechterew showed a prolonged time of consideration, a fact also observed by me; his observations otherwise were also in agreement with my own. In Bechterew's differential table, a worse record was shown only among General Paralytics. This experiment again confirms the results of clinical observation.

Both of the above named tests will be rather of more service in differentiating dementia epileptica from other forms of deterioration. The tests for visual reconstruction, imagination and synthesis however I found of great value for the determination of congenital defects. Many of the patients, who tested in the Binet Simon test much below their norm succeeded as well or better than the average normal individual. Some of the patients examined showed

1) We have been unable as yet to obtain original pictures but hope to get them soon from Bechterew's clinic in St. Petersburg. We therefore used the illustrations printed in the above named article. As the illustrations to the first test were too small and indistinct we could not apply this test in our experiments.
a low record in the test of imagination for instance, at the same time showing an unusually good one in the test for visual reconstruction. On the whole, all these tests showed very a promising aspect for the differential diagnosis of epileptic deterioration from congenital mental inferiority, as well as from other forms of deterioration.

I must refer the reader for details of curves to Bechterews original article; to illustrate my process of reasoning and the special points of interest I shall cite a few cases which I tested with all the methods mentioned in the article.

6. Boy of 13, admitted to the Village early in 1910. On admission made almost anormal impression; was until recently one of the brightest children. Made good progress in school and in the band. He tested age 11 with the Binet Simon test, when 12 years old, thus he was hardly one year behind and could only be classified as backward, as he failed in both of the memory tests for the age of 12 (test 50 and 52 and in the tests 47 and 48). On the other hand he succeeded in the test Nr. 54. The Form Board test was performed without error in 21". In the summer of 1911 he went home for a vacation. Since his return to the Village he has shown an enormous change in mentality and increased number of seizures. In the short time of a few months he demented an almost normal boy to an absolute dement. He apparently forgot whatever he had learned at school or in the band. He now sits most of the day in a chair, with a grinning expression on his face; does not even remember the names of his former acquaintances.

The Binet Simon test grades him at the present time as hardly 7, and this was only due to tests of counting or other mechanical ones as he failed in other tests under this age. A questions were answered slowly. The time of associations was between 4 to 9 seconds. He is able to count correctly but can not and over 18 counts of two digits in a minute, although formerly a very good arithmetician. The Form Board test is done correctly in 1' 34". Healys Puzzle A is done in 9 minutes with 21 moves. He had to be urged to proceed, did not take any special interest in the experiment, but not once did he attempt an impossible move.

He could not finish the Puzzle B, but was on the right way
and no doubt would have met with success with some amount of attention and interest.

In Bechterew's test for comparison he detected the increase of details in the 4th picture; in the decreasing series, in the 3d picture. A picture of a cow he recognised as such in the 2nd picture, that of a wagon in the first one. The time needed for recognition was between 10 to 18 seconds. He recognises the outlines of a lamp in the 3d, the outlines of a rooster in the 4th, the outlines of a knife in the second and finally the scattered parts as belonging to a lamp after 34".

Even without previous knowledge of the case history, we should be able, from the tests at hand, to say that this boy must have once been a fairly smart individual, but that he is greatly deteriorated and that a diagnosis of epileptic imbecility would be unjust and misleading besides necessitating a change of the Binet Simon diagnosis, made in the space of a years time, from retarded to low grade imbecile.

7. A boy of 15, admitted December 1911. Father epileptic. Patient had two seizures before the age of 4, then began to have convulsions about the age of 7. He went as far as the third grade, but his poor memory prevented him from making progress. Has remained at home since then.

According to the Binet Simon grading he tests about 9 and 1/2. He fails in all tests relating to memory, assigned for children over the age of 5. The common sense tests are answered however very satisfactorily and the test for the age of 10 is passed correctly. This examination shows, that his memory for remote and recent events is very poor, in like manner his impressibility, and that therefore, it is no wonder that he makes no progress in school. He is not regarded by his teachers as incapable; they assign his failure to poor memory. The Form Board test was made correctly in 17 seconds. In Healy's puzzle test, prompt success was met with after one demonstration. No impossible moves were attempted. The tests for observation showed very poor results as he was unable to detect any difference in the pictures with increasing and decreasing details. His record for reconstruction was much better, recognising the back part of a cow as such in the second serial picture, and even recognising the anatomy of an animal in the first. The wagon was recognised in the first picture. His imagination was shown to be
excellent. The outlines of a lamy, knife and a very difficult one of a rooster were recognised in the first picture; a better record than any normal person whom I tested.

My inference is that apparently defective and probably slightly feebleminded, he represents a condition, which is the result of epileptic deterioration, congenital feeblemindedness and lack of proper education. He shows traits which are not to be found in a congenital imbecile, to whom he bears a strong superficial resemblance.

8. A boy of 12. Father, dead, was in fair circumstances, and apparently normal, but with cases of epilepsy in his fraternity. Mother, a very peculiar woman, neurotic, hypersexual, quarrelsome and insisting on her rights. She owns a store, but in spite of good opportunities, her business since her husbands death is unsuccessful, as all her customers are afraid of her. A typical querulant, it is an apparent pleasure for her to sue people, and at the present time she has two or three suits on her hands, mostly for imaginary damages. Her character is well known, and lawyers of good standard refuse to take up her cases.

The boy has ad seizures since his earliest childhood. Was admitted to the Village in 1912. He was considered bright but rather lazy; had a schooling adequate to his age. Was described as having an uncontrollable temper. Since admission, makes good progress in school and the band, has occasional fits of temper; if angered very vulgar and quarrelsome, and is apt to fight at the slightest provocation. Shows strong likes and dislikes for people, insists upon his rights, and considers himself a judge, as to whether he is treated justly or not by others, especially his teachers. His unwillingness to study, he explains on the ground of personal resentment to some of his teachers, and his belief in their inability to teach in the public schools.

He is the only child, which answers all questions in the Binet Simon test correctly. Some of his answers show an excellent ability for logical definition, which is rarely found even among normal adults. Bechterew's tests were answered better than the average normal person would do. Puzzle A test was apparently a difficult problem for him, as it took him over four minutes. Once however used to this kind of work, he performed the puzzle B test with only two moves
above the minimum, in a surprisingly short time of 21'', considering that the test is really not an easy one.

This boy is a interesting study. In the first place, from a hereditary point of view he is an epileptic due to an epileptic strain in the paternal ancestry; he is also however a psychopathic personality due to inheritance from his mothers side. All his mothers mental peculiarities are revided and easily traceable in his own mental makeup. I therefore claim that he is an epileptic whose intellect is as yet unattacked by the disease\(^1\), and that his character is independant from the disease and easily traced to his bad heredity on the mothers side.

From a psychological point of view, we come across a case which would probably be a puzzle to a teacher. Rather exceptionally smart, he still would not make the expected progress in school, as his emotional and volitional sphere is decidedly pathological, and as the whole he is defective.

From a purely psychological point of view the length of time required for solving Healys puzzle A is of interest, proving how little one can depend on the time expended, for judging a person's ability.

This case is well adapted for the introduction of a controversy which is at the present time actual. Some epileptologists, basing their opinion on research work done on heredity, claim that the feeblemindedness in epileptics, even if congenital is not feeblemindedness in the true sense of the word but a symptom of the disease, the causation of convulsive symptoms ad the mental inferiority being identical. This view is strongly opposed by experts in feeblemindedness, who take the point of view, that

\(^1\) I wish to emphasise the fact that the disease did not attack the intellect as I believe that has an influence on his emotional life developing and exaggerating the already present psychopathic traits of character. It is perhaps interesting to know that the boy was never treated with bromides.
feeblemindedness is an independant factor. From a psychopathological point of view I am a disinterested party in this controversy. I wish to again take up the example of the congenitally blind person, and those who become blind before the age of 4. Their mental status is equal in any case, whether the blindness is due to accident, syphilis, gonorrhoea or atrophy. Wat is the causation of feeblemindedness, in most cases we are unable to say. It is quite probable, that in many cases the epilepsy is the etiological factor. It does not change the psychological aspect. Our standpoint is that there is an essential difference between those persons who are born defective, or become so in their earliest childhood and those deteriorated in later life. A great number of epileptics are born defective or become so in the first four years of their life. Between these and other cases of congenital defectives on the one side, and demented epileptics on the other side, there is a visible and by special tests demonstrable disparity.

Some observers ¹) claim that a feeblemindedness due to epilepsy, even though acquired at the earliest age, will show points of dissimilarity from imbecility which has been otherwise acquired. This is quite possible, but it needs however further study. Psychology, united with the study of heredity, could also make a special study of those, who being descended from epileptic parents are feebleminded but without epileptic seizures whatever. Should it be true, that epilepsy is the causation and that imbecility with epileptic causation has a different symptomatology, they would be expected to show characteristics of epileptic mentality. ²) Thus we can readily perceive how

¹) Echeverria for instance, that advocate of the exogenic causation of epilepsy.
²) The term of epileptic imbecility could be used as a diagnostic terminology for these patients. It would emphasise in the term “Imbecility“ the congenital character of their mental defect, and the adjective “epileptic“ would indicate the etiology of the defect. For
psychology, remaining on its own ground, that is, the investigation and analysis of the mental status present of patients, and leaving the explanation of causes to other branches of science, can be inspired by the latter to new and unexplored fields and be of help to them in exchange.

Before closing the discussion on this point, I should like to add the remark, that if psychopathology and psychiatry in general is to be helped by the study of heredity, it should have a clear field for investigation without a pledge to any special theory. I do not doubt, that in many cases of epileptics all symptoms present are due to the disease, but that it will soon be the universal conviction that we are justified in making a diagnosis of epilepsy even though no other epileptic symptoms were present, than let us say a only specific feeblemindedness. But, specific must it be. At one time, the Italian school went so far as to call every outburst of temper and violence, epilepsy. We have justly freed ourselves from this conception. The guide for our present classification will be psychopathology and the heredity charts. With the help of both we shall be able to classify the cases justly. I refer the reader for instance to the above cited case Nr. 8. Psychological analysis disclosed in this boy certain mental characterists. He is an epileptic. We state that these characteristics are independant from the disease. This conclusion is justified by the fact, that while we can trace epilepsy on the paternal side, the patients mental make up is directly derived from his mother, giving a disastrous combination in an individual. This inference is perfectly in accordance even with the Mendelian law, as epilepsy and neuropathic tendencies may be and surely are two independant units and thus can be independantly transmitted. Thus the science of Eugenics can also be benefited by psychology.

all other cases the term dementia or for the indication of milder forms, the term deterioration is the only proper and descriptive term for diagnosis.
There are many other problems of great interest. Our laboratory in Skillmann, being the first one erected in this country or anywhere for the purpose of special study of the psychopathology of Epilepsy, is of very recent date. We have thus far have made good progress, and hope, that soon, we shall be able to contribute valuable data to the understanding of clinical symptomatology, the effect of convulsions, the influence of bromides; the simple but ingenious reckoning experiment introduced by Kraepelin, has not failed to disclose valuable points toward the understanding of the pathological reaction of the epileptic working mind 1).

I hope that this brief paper justifies the expectations in psychopathology, of those who have put trust in such a research work, and has helped to disperse the scepticism of those, who have often asked: what is the use of psychology in medicine? Psychology in its applied field of psychopathology, has not been able to accomplish much in this short space of time. However, when we look back over the progress of general pathology and the "facit" of this science, which for years has been at work in costly laboratories all over the world, I feel that psychology has no need of looking askance at its sister branch psychopathology.

Conclusions.

1. The extraordinary development of psychology and its methods in recent years, has brought the psychological science into prominence and has directed its appliance to practical purposes. Medicine has come into close contact with psychology and a new science, psychopathology has sprung into existence.

2. Psychology is one of the most difficult fields of study and therefore the research work if valuable must be

1) This investigation which is helping us to understand the different types of epileptic dementia and the immediate effect of seizures has been completed.
preceded by the studious preparation of years in laboratories of experimental psychology.

3. In order to qualify as a research worker of psychopathology, a thorough knowledge of psychology on the one side, and a most intimate familiarity with the projections of the morbid mind on the other side, which can only be acquired by clinical observation and some years of experience in institutions for the insane and defectives, is absolutely essential.

4. Neither psychology itself nor medical experience alone suffices to accomplish scientifically valuable work.

5. The popularisation of results which are as yet not beyond a stage of experimentation, is harmful to the science which originated such results, as it leads to miscredit and failures.

6. Psychology has often committed such mistakes and work which should only be confined to laboratories and conducted by specialists, is being applied by those who are not able to grasp the significance of certain signs, thus causing them to draw hasty and faulty conclusions. They wreck their own field of work and cause unfavorable comments on psychology because failure is unavoidable and a reaction against such proceedings of necessity follows.

7. Pedagogic is the science which is most at fault in this regard in its relations to psychology and to itself.

8. The greatest abuse and misuse is practised with the Binet Simon test.

9. In its present form although not scientifically free from objection the Binet Simon test may render valuable service for practical pedagogics making feasible a quick orientation about an abnormal pupil's mentality.

10. It is not possible to introduce tests and methods of mental examination into psychopathology without modification. The Binet Simon test in its present form therefore cannot be used for the testing of mental defectives.
11. Epilepsy is a disease which is not only commonly associated with a mental defect, but it leads more or less to a pronounced deterioration of the mind.

12. It is, therefore, useless to apply the Binet Simon test mechanically to epileptics, in its present form and to speculate about the patients corresponding age.

13. The statistical investigation of the Binet Simon test has shown conclusively that the authors did not succeed in eliminating the necessity of a school training, thus failing to form a test for the testing of pure native ability.

14. The overwhelming preponderence of failures in epileptics is due to the deterioration of memory, psychomotor retardation, lack of training due to the absence of school education and lack of the common experiences of life caused by the necessity of early confinement.

15. The comparison of the relative percentage of failures in children and adults was in this regard most convincing. Children showed a higher percentage of failures in questions relating to knowledge which must necessarily be acquired by contact in a community, for instance elementary arithmetic and the knowledge of money. Adults failed more frequently than children in those questions requiring a display of concentration and memory, thus proving the progressive deterioration of these mental faculties.

16. The surprisingly frequent failures of epileptics in the estimation of small differences of weight is surely not due to defects of intelligence, but finds its explanation in an abnormality of inner tactile sensation of the muscles and joints. The progressiveness of this abnormality is demonstrated by the higher percentage of failure in adults.

17. All findings are in accordance with the clinical observations of epileptics.

18. The experience gained with the Binet Simon test on epileptics can be exploited in a pathopsychological way,
by helping to eliminate objectionable questions from the tests.

19. For the test 41 and 36, the proposed modification could easily substitute the mechanical recitation.

20. The *Binet Simon* test is the most ingenious first step towards the determination of individual native ability, and it is of the most vital interest for applied psychology. None but skillfull psychologistes should apply these tests to normal individuals, and none but skillfull psychopathologists to abnormal individuals.

21. All results justifying the suspicions of an abnormal mentality, should be referred to a psychopathologist who alone would be justified to make a differential diagnosis between a congenital mental defect and an incipient psychosis, in other words, discover the mental cause for the existing retardation.

22. The psychopathology of epilepsy is a different problem than that of imbecility.

23. Imbecility is a congenital defect, for this reason the terminology "Epileptic Imbecility" is not the proper one.

24. The proper terminology of diagnostication for epileptics would be epilepsy with a congenital mental deficiency of imbecility, idiocy or moronity. In other cases, epileptic deterioration or dementia superposed in epileptics with etc.

25. Such a method of diagnosis emphasises the graver factor of the affliction and would meet with the approval of those whose theory claims that the congenital defect in epileptics is in itself one of the symptoms of latent epilepsy due to the same cause and different from other forms of congenital mental inferiorities.

26. The writer is not prepared at the present moment to take part in the controversy regarding the etiology of congenital deficiency in epileptics. Psychological researches must be directed in order to analyse the disparity of epileptic mental deficiency from others.
27. The Form Board test, Healys puzzle test and the Bechterew test are most successful in the elimination of the element of training, thus being of value for the analysis of epileptic mentality, regarding the amount of mental native ability and the damage due to deterioration. The preliminary investigation was very promising in its results. In all tests, not the duration, but the quality of work signifies the intelligence.

28. Psychopathology proves to be of the greatest value in the study of epilepsy together with careful clinical observations, general pathology and pathological physiology.

BINET-SIMON TESTS FOR INTELLECTUAL DEVELOPMENT.

<table>
<thead>
<tr>
<th>Age 3</th>
<th>Total Number</th>
<th>Children</th>
<th>Adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Points to eyes, nose, mouth etc.</td>
<td>4.5</td>
<td>5.0</td>
<td>4.3</td>
</tr>
<tr>
<td>2. Repeats six syllables</td>
<td>11.0</td>
<td>13.1</td>
<td>10.3</td>
</tr>
<tr>
<td>3. Repeats two numerals</td>
<td>6.5</td>
<td>13.1</td>
<td>4.3</td>
</tr>
<tr>
<td>4. Enumerates familiar objects in picture</td>
<td>6.8</td>
<td>8.0</td>
<td>6.3</td>
</tr>
<tr>
<td>5. Gives family name</td>
<td>4.3</td>
<td>8.0</td>
<td>3.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age 4</th>
<th>Total Number</th>
<th>Children</th>
<th>Adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. Knows own sex</td>
<td>6.3</td>
<td>9.0</td>
<td>5.3</td>
</tr>
<tr>
<td>7. Recognises key, penny, knife etc.</td>
<td>7.3</td>
<td>10.3</td>
<td>6.3</td>
</tr>
<tr>
<td>8. Repeats three numerals in order</td>
<td>10.8</td>
<td>17.1</td>
<td>8.7</td>
</tr>
<tr>
<td>9. Recognises a longer line by a cm</td>
<td>11.0</td>
<td>18.1</td>
<td>8.7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age 5</th>
<th>Total Number</th>
<th>Children</th>
<th>Adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>10. Discriminates weights of 3 and 12, 6 and 15 g</td>
<td>12.5</td>
<td>21.1</td>
<td>9.7</td>
</tr>
<tr>
<td>11. Draws square from a copy</td>
<td>15.8</td>
<td>24.1</td>
<td>13.0</td>
</tr>
<tr>
<td>12. Rearranges into a rectangular part triangular pieces</td>
<td>27.5</td>
<td>31.1</td>
<td>26.3</td>
</tr>
<tr>
<td>13. Counts four pennies</td>
<td>9.8</td>
<td>17.1</td>
<td>7.3</td>
</tr>
</tbody>
</table>
## CRITICAL ESSAY ON MENTAL TESTS IN THEIR RELATION ETC. 171

<table>
<thead>
<tr>
<th>Age 6</th>
<th>Total Number</th>
<th>Children</th>
<th>Adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>14. Shows left ear, right hand</td>
<td>12.6</td>
<td>24.4</td>
<td>9.0</td>
</tr>
<tr>
<td>15. Repeats sixteen syllables</td>
<td>65.3</td>
<td>56.5</td>
<td>68.0</td>
</tr>
<tr>
<td>16. Distinguishes in pictures, pretty from ugly faces</td>
<td>20.0</td>
<td>29.8</td>
<td>17.0</td>
</tr>
<tr>
<td>17. Defines in terms of use the words, table, chair, horse etc.</td>
<td>19.2</td>
<td>28.8</td>
<td>15.7</td>
</tr>
<tr>
<td>18. Performs three commissions given simultaneously</td>
<td>29.1</td>
<td>35.8</td>
<td>27.0</td>
</tr>
<tr>
<td>19. Knows on age</td>
<td>29.8</td>
<td>37.8</td>
<td>27.3</td>
</tr>
<tr>
<td>20. Knows whether it is forenoon or afternoon</td>
<td>16.4</td>
<td>28.8</td>
<td>12.7</td>
</tr>
</tbody>
</table>

### Age 7

| 21. Notes from portraits omissions of eyes, nose etc. | 25.4 | 37.8 | 21.3 |
| 22. States number of fingers on right, left and both hands | 16.9 | 28.8 | 13.3 |
| 23. Copies written sentence | Omitted | — | — |
| 24. Draws diamond shaped figure from copy | 30.6 | 38.8 | 27.3 |
| 25. Repeats five numerals | 43.3 | 49.4 | 41.3 |
| 26. Describes actions and scenes in test five | 37.9 | 37.8 | 38.0 |
| 27. Counts aloud thirteen pennies in row | 15.9 | 29.8 | 11.7 |
| 28. Recognises penny, nickel, dime, and quarter | 17.4 | 28.8 | 14.0 |

### Age 8

| 29. Reproduces correctly two facts after once reading a story | 30.3 | 35.8 | 28.7 |
| 30. Counts three one, and three two cent stamps | 34.9 | 41.3 | 33.0 |
| 31. Names red, green, blue, yellow | 19.7 | 27.1 | 17.3 |
| 32. Counts from twenty backwards | 37.2 | 42.4 | 35.7 |
33. Writes easy dictation . . . . — Omitted —
34. State differences between paper and cloth, wood and glass etc. 30.1 38.9 28.7

Age 9.
35. Gives the date of the day . . 35.4 37.9 34.7
36. Names the days of the week in order . . . . . . . . 19.6 28.7 17.0
37. Gives correct change from a quarter, if nine cents expendend . . 53.8 54.0 53.7
38. Defines by description or classification the words of tests 17 . . . 70.0 62.0 72.0
39. Reproduces six facts, as in test 29 6.84 64.3 69.7
40. Arranges in order of weight boxes weighing 6, 9, 12, 15 and 18 g 73.8 55.1 79.3

Age 10.
41. Names the months in order . . 32.5 42.8 29.7
42. Recognises money as in test 28, plus half a $, 2, 5, and 10 $ bills 21.8 28.9 20.0
43. Uses three given words in a sentence . . . . . . . . . 56.5 43.8 58.7
44. Replies to problem question: “what should you do?” 1) . . 52.1 52.4 52.0

1) 1. When you miss a train?
2. When struck by some one on intentionally?
3. When you break an object belonging to some one else?
4. When you are late for school?
5. Before you take part in an important affair?
6. When asked for an opinion of some one you do not know well?
7. Why should you forgive a wrong act committed in anger, more quickly than one not committed when angry?
8. Why should you judge a person by what he does rather than by what he says?
<table>
<thead>
<tr>
<th>Age 11.</th>
<th>Total</th>
<th>Children</th>
<th>Adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>45. Detects nonsense in the out of five statements</td>
<td>69.5</td>
<td>60.1</td>
<td>72.0</td>
</tr>
<tr>
<td>46. Uses three given words in one sentence</td>
<td>67.6</td>
<td>53.0</td>
<td>71.7</td>
</tr>
<tr>
<td>47. Utters at least 60 words in three minutes, exclusive of duplicates</td>
<td>81.2</td>
<td>62.6</td>
<td>86.3</td>
</tr>
<tr>
<td>48. Defines charity, Justice, Kindness</td>
<td>71.7</td>
<td>66.2</td>
<td>73.3</td>
</tr>
<tr>
<td>49. Rearranges shuffled words in sentences</td>
<td>80.9</td>
<td>63.8</td>
<td>85.7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age 12.</th>
<th>Total</th>
<th>Children</th>
<th>Adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>50. Repeats seven numerals in order</td>
<td>81.6</td>
<td>68.8</td>
<td>85.0</td>
</tr>
<tr>
<td>51. Names three words that rhyme, f. i. day, spring, mill</td>
<td>62.4</td>
<td>51.6</td>
<td>65.0</td>
</tr>
<tr>
<td>52. Repeats twenty six syllables</td>
<td>82.4</td>
<td>67.1</td>
<td>86.0</td>
</tr>
<tr>
<td>53. Infers facts from given circumstances which indicate the facts</td>
<td>80.3</td>
<td>65.6</td>
<td>83.7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age 13.</th>
<th>Total</th>
<th>Children</th>
<th>Adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>54. Images and draws triangle cut from sight of quarto folded paper</td>
<td>26.3</td>
<td>17.6</td>
<td>28.0</td>
</tr>
<tr>
<td>55. Images and draws new form produced by joining transpose pieces of diagonally divided rectangular card</td>
<td>11.8</td>
<td>5.2</td>
<td>13.0</td>
</tr>
<tr>
<td>56. Distinguishes abstract terms of similar sounds or meaning (pleasure and happiness, event and advent, evolution and revolution, pride and pretention, poverty and misery)</td>
<td>3.9</td>
<td>1.7</td>
<td>4.3</td>
</tr>
</tbody>
</table>