NOTES ON THE PROGNOSTIC VALUE OF PSYCHOMETRIC TESTS AS COMPARED WITH CLINICAL SIGNS IN EPILEPSY.

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From data now at hand it is obvious that the diagnosis and prognosis of many cases of essential epilepsy rest in no small degree upon accurate analysis of the so-called mental stigma of the disorder, the epileptic constitution, as well as the modifiability of the latter under appropriate training treatment. Likewise the course of the disorder is to be judged by the presence or absence of deterioration and its degree. As regards deterioration, in the past we have been content for the most part to indicate it purely on the basis of a clinical estimate of behavior, ability to do work and like data. However, it now seems opportune for us to call to our aid a more precise method to determine the initiation of deterioration not only for prognostic reasons but also that one may early determine the efficacy of any definite plan of training treatment. The psychometric work of Eberschweiler and Jung and, more especially, the proofing test of Hahn, are suggestions in point. Although a large number of studies of this psychological character has appeared, Hahn was able, in 1913, to check up some of his work on the same clinical material studied in 1903 and 1908. The time interval between the two sets of studies were from two to four years. As is natural the findings in his studies had to exclude the mental infirmity due simply to an arrest in growth and development as well as a proper allowance made for the wide variations of the primary endowment in such individuals. Hahn employed a

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very free and modifiable system of testing. In brief, he found the following in 7 cases studied:

The first case of medium deterioration showed an increase in tendency to revert to the child type of reaction (increase of deterioration). In the second case of mild deterioration he found the reaction time became prolonged in the later tests and there was a tendency to greater perseveration; clinically the case was supposed not to have increased in deterioration. In the third case the clinical and the psychological deterioration were quite in accord in spite of cessation of attacks; there had never been many attacks in the case, and none since trephining a year before the final testing. Hahn's comment coincides with that of many other observers, clearly set forth by MacCurdy in his epileptic deterioration study. Hahn says: "The psychic alteration in epileptics cannot therefore be straightway due to the convulsions, either to their number or severity, and an avoidance of attacks, however valuable practically, in most cases does not indicate a 'therapia magna.'" The fourth case studied was a child, aged thirteen years, at time of report, who showed deterioration in association with normal development. In the tests at two-year intervals the latest showed a prolongation of reaction time and a marked tendency to perseveration (signs of deterioration). It was interesting to note that the mental regression in nowise seemed to retard any phase of the physical growth. The fifth case was one of slight deterioration in a woman, aged thirty-three years. The tests showed practically no increased deterioration in spite of the fact that the woman had had severe attacks rather frequently since early childhood. It seemed possible, from the favorable testing (in 1904), that this woman might finally recover. The latest report (1908) showed that this outcome might still be expected. The sixth case, a woman, who had had no attacks from the first to the last test in a period of two years, showed steady and apparently normal development. The reaction time gradually approximated the normal and perseveration disappeared. In 1906 the psychological test was in accord with the clinical opinion that the case was a good example of "arrest," which was in sharp contrast to Case III, who also ceased having attacks but continued to deteriorate. Case VII, a woman, aged thirty-seven years, showed psychological accord with the clinical record of progressive improvement; the former even outran the prognostic acumen of the clinical recognition of the betterment.

There can be no doubt that a psychometric setting of epileptics would be eminently helpful to the diagnosis, prognosis and therapy of the disorder. Although the work may be fraught with much difficulty the study ought not to be neglected. At present the clinical criteria are too elusive and unsatisfactory to estimate the epileptic deterioration.

As an earnest of the foregoing we have undertaken some repeated testings in a few epileptics at the Randall's Island institutions. The cases were selected at random for the purpose of noting the accordance or non-accordance of the changes in (1) convulsive frequency, (2) the clinical evidences of alterations in conduct, behavior and work, and (3) the more precise analysis of a psychological testing by the Binet, performance and simple word-association tests for recording the reaction time, perseverance and the range and flexibility in the intellectual and emotional life of the epileptic.

Case I.—The first case is that of Harold E., who was admitted to the Randall's Island institutions April 21, 1916. He is now fourteen years old. He had an apparently normal development of childhood. The onset of his grand mal epilepsy at nine years of age seemed to have had little influence on his school work until the year preceding his admission, when he had to repeat one year. The attacks were reported to have occurred three or four weeks apart at that time. He has always possessed the character defects of the epileptic make-up, and these have become more pronounced during the past year.

Two years ago he Bineted 10.4, which was 1.6 years below his real age. During the examination it is recorded that he had a quiet demeanor; he was interested in everything in the room and talked in a straightforward manner, but his attention was very easily distracted. His reproductive memory was very good (six digits in figures and fifteen syllables). His general intelligence seemed normal. He had a normal grasp on the central idea of a story and laughed heartily over a humorous picture; he easily identified street scenes. He was rather unstable emotionally, and was reported to be quarrelsome at times. In 1915, when the first test was made, the attacks averaged one in three or four weeks, and were always grand mal in type, occurring at night. They continued through 1916 at about the same frequency. At present (1917) the frequency and severity of his epilepsy has apparently not undergone much change. However, his mental examination by the Binet test now shows him to be 8.2, two years less in the two-year interval since his first test. The whole test at present indicates considerable epileptic deterioration, there is a superficial reaction to word-association, and his time reaction is very much slowed; for instance, such words as book, storm and letter he takes thirty-five to forty seconds to respond. There is a marked tendency to perseveration, a clinging to the one type of word-response for a number of unrelated words given. His attitude during the test was marked by mannerisms. For instance, he sat with a dull, lethargic expression, his eyes shaded with his hand, and in an annoyed manner frequently held up his hand to the examiner and said, "Keep quiet," and "Do not say anything." Evidently he is aware of the slowness
and confusion of his thoughts and his difficulty in grasping the simple tests given him. His attitude, on the whole, was quite friendly throughout the examination, but he evidenced an abnormal reaction in shallowness of mental grasp and a rigidity in physical and mental response.

In this boy we find no apparent change in the number and severity of the epileptic attacks, but other clinical and psychological evidences show a relatively rapid progress in mental deterioration.

Case II.—The next case is that of Elliot M., a man, now thirty-five years old. His birth was prolonged and instrumental. He did not talk until two years of age, and only formed full sentences when three years old. He began school at seven and discontinued at fourteen. He never reached the grammar grades, and often played truant. He often stole money as a boy, and drank, was passionate and of the typical epileptic. At twenty he had a right hemiplegia. A month after this stroke he had his first seizure. The attacks are mostly of the grand mal type. Two years ago, at the age of thirty-three, he Bineted 8.6 years. His performance test was fair but the reactions were slow and deliberate. His perception of form was good. His interest and attention were good. Perseveration was marked. While his cooperation on the test was good he required much encouragement. He was much embarrassed at not doing better at tests, not usually seen in ordinary essential epileptics. He had much difficulty in expressing himself, as he said, “The answers come to me and then leave me and I can’t recall them.”

He had three or four grand mal attacks a week the first three years. During the past five years the attacks have diminished in severity and frequency, and there now is a slight warning of a “rush of blood to the head.” He is now able to lie down on the floor and unbutton his shirt before he becomes unconscious. His attacks now have diminished to about two a month instead of that many a week several years ago. His present mental examination, however, shows he Binets to 7.6 years of age mentally. He has lost a year in rating in the two years in spite of the diminution of epileptic attacks. It was found that while his attention was good throughout the test he thought more slowly and laboriously. His memory is badly impaired. He says he once read easily but cannot now recognize simple words. His reaction time is very slow; to such words as love, ship and door his time is over forty seconds. As this patient has a positive Wassermann in the spinal fluid his right hemiplegia is probably a specific thrombosis and his attacks are symptomatic or epileptiform.

The case is interesting because in spite of a great diminution of grand mal attacks the patient is deteriorating mentally, as shown by precise tests, although ordinary clinical evidence does not show this; that is, he is better behaved, does more consistent and good work
about the institution, and yet the underlying organic injury to the brain is probably progressive in character.

Case III.—The next case, Mary D., is that of a woman, aged forty-six years, whose seizures began at puberty and continued for a few years, and occurred every other day. In spite of her epilepsy she was married at twenty-five and has one normal daughter, now seventeen years of age. Two years ago sheBineted 8.8 years. During the mental examination two years ago her demeanor was quiet. She had the general appearance of discouragement. Her memory for former and recent events was poor. Of ten pictures displayed in succession she was unable to recall any. She had poor mental grasp on stories and detailed descriptions. Her power of reasoning was poor and she was easily confused. She was having about fifteen seizures a month at the time of this examination. Her attacks apparently have not changed in frequency or severity since the testing two years ago.

Her present test shows her to be 7.6 years mentally, a loss of one year in two years. Her reaction time varies from two seconds to one minute and fifty seconds. In general the test showed great distractability; she tried to talk of things that had no bearing on the tests. Her judgment and comprehension were poor and there was a great slowing in the reaction time.

On the whole the case showed deterioration of a mentality that also gave evidence of a defective primary endowment. In spite of the fact that there was no apparent change in the seizures in frequency or severity this patient is steadily deteriorating, and here the clinical and psychological tests are in accord if one excludes the consideration of the epileptic attacks which have undergone no change.

Case IV.—The next case, Carrie H., is that of a young Polish woman, aged twenty-one years, whose epilepsy began soon after puberty and whose mentality was that of feeble-mindedness. Two years ago the mental examination was difficult to make on account of the patient’s inability to handle the English language. She spoke Polish. Her answers were prompt, however. She Bineted to the mental age of 6.6 years. The patient stated persistently that she had her first epileptic attacks at seventeen, and that at first they occurred irregularly twice a week. In 1916 she had 84 attacks, which was considerably less than the year before. For the present year the attacks show even fewer than 1916. The present test, however, shows that she is of the mental age of 5.8 years, a loss of a year in mental grading. Her demeanor was quiet and friendly. There was quite marked slowness in word-association, such as forgirl, rain and island; the responses were all over thirty seconds. Her memory was fair; she still had a nervous manner in talking. She still has a poor knowledge of English. The clinical facts, including the diminution of epileptic attacks, are rather at
variance with the psychological testing. The latter showed that there was an increasing deterioration upon a primary inferior mental endowment. The deterioration was shown in an increased emotional poverty of ideas, perseveration and an increased slowing of the process of thought.

CASE V.—The final case, Rosa C., is that of a young married woman, aged twenty-nine years, whose epilepsy began at sixteen years of age. She had been married and was pregnant eight months at the time. It was a poor marriage and against the parents' advice. The husband drank to excess and the patient greatly feared bearing children, and was much worried before the first attack. Two years ago she Bineted 9.8 years. On the form board she gave only fair results. The picture-completion test was disproportionately good. Cooperation, interest and attention were good. She was quick to react. Her manner was open and friendly and cheery. Her attacks, which occurred about three a week two years ago, are now a little less frequent, being but one or two a week. Her present mental testing shows she is 9.6, which is only a little less than that shown two years ago. Her reaction time was much better than the others tested in this series; her longest reactions in simple words were eighteen and twenty-two seconds. Her demeanor was quiet and friendly and her attention was good throughout. She says simple, silly things, gives the nurses no trouble and helps at the scrubbing, but her work is not dependable. She is rarely excited.

Here we have a less conclusive case for the relative value of clinical and psychological testings. There is an improvement in regard to seizures and a somewhat better adaptation to her life and work, although the latter is rather poorer than formerly. Psychologically the testing showed a slight retrogression, hardly conclusive enough, however, to possess a deteriorating significance.

In conclusion we may say that the data here presented, while too few for any general statement, are of sufficient clinical importance to show that we must not depend upon a diminution of the epileptic attacks solely in an epileptic to warrant giving a better prognosis, but that the clinical facts of improvement in character and conduct, and kind of work, are to be included. We must also incorporate a more precise mental testing by simple psychological means. Unless all three groups of facts are relatively in accord one ought not to make a positive prognosis of improvement or deterioration in any given case. In time we hope to simplify the psychological testing so that it may be easily performed in ordinary office practice. It is, however, already evident that the single word-association test will enable the physician to judge of the degree of perseveration and the length of reaction time, which are the main criteria for determining the presence and amount of mental deterioration.