

1915

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Recommended Citation

H. C. Stevens, Eugenics and Feeble-mindedness, 6 J. Am. Inst. Crim. L. & Criminology 190 (May 1915 to March 1916)

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EUGENICS AND FEEBLEMINDEDNESS.¹

H. C. STEVENS.²

The study of the problem of feeble-mindedness, as prosecuted up to the present time, has developed two fairly distinct phases. The first phase began in the first half of the 19th century with the demonstration by Seguin and others, that feeble-minded children could be materially improved by hygienic and special educative treatment. Custodial care in the large state institutions is the practical outcome, and the physical expression, of the efforts for betterment in this direction. On the physical side, this movement had for its object the care and improvement of the health of the mentally defective children. Obviously, where mental deficiency and economic dependence are so frequently conjoined, the bodily health of these unfortunates can be better controlled in custodial institutions under the supervision of the state government. No one who is acquainted with the work of the better class of state schools will doubt that a long step forward was taken by the development of these institutions. On the mental side, the program of Seguin and his pupils crystalized in the physiological method of instruction which has become the foundation of all subsequent systems of training of mental defectives. Two permanent contributions of great value were thus the outcome of the earlier work. With the development of experimental psychology, a new mode of attack upon the problem of feeble-mindedness was originated. The credit for first perceiving the connection between the chroscope of the psychologist and the cranium of the idiot belongs to Witmer of Philadelphia who began active work in this field in 1896. The publication of the Psychological Clinic in addition to several volumes by Witmer and his pupils has been the incentive to the inauguration of similar lines of study in many places in this country. The value of this study has been in the recognition of the importance of the purely mental factors in mental deficiency and abnormal behavior of all sorts. The goal of the endeavors of workers in this field has been the development of tests for the analysis of the funda-

¹Goddard, H. H., *Feeble-mindedness: Its Causes and Consequences*. The Macmillan Company, 1914, pp. xii. 599.

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mental psychophysical reactions. Up to the present, two notable achievements may be recorded: the development and standardization of the Binet-Simon Scale and the Association word test. Popular interest in this movement has expressed itself in the installation of psychologists in the schools; in the psychopathic hospitals; the Juvenile Courts and upon the examining staffs of the prisons. Great as is the practical value of the psychological method, it must be frankly conceded that it leaves untouched the problem of the cause of feeble-mindedness. The problem of causality is not touched for the reason that the psychologist deals only with the symptoms of deranged functions. The sensory, associational and behavior aberrations are merely the outward effects of the underlying organic causes. Until the mental pathology is joined to the organic pathology no very important advance in the discovery of fundamental causes can be made.

The creation of the research department of the New Jersey institution at Vineland marked the beginning of a new opportunity in the psychopathology of mental deficiency. The institution itself represents in a very favorable form, the custodial type of institution with the educative features well developed. To these well organized departments the department of research was added. A psychologist was made director. The volume which is the occasion for this review may reasonably be considered the outcome of the director's research activity. One may rightfully consider it an expression of the author's mature conviction: a well considered summing up of the case. We are told that five years of investigation have gone to the making of the book. We are therefore prepared to weigh carefully the conclusions of the author and to listen with respect to what he has to say. The sub-title of the book is: Causes and Consequences. The author has arrived at a very definite conclusion as to the cause of feeble-mindedness. He concludes as a result of his study of cases, that Mendelian inheritance is the cause of feeble-mindedness. The practical outcome of this view is the prevention of feeble-mindedness by sterilization. Defective germ plasm is the cause. Therefore, destroy the defective germ cells and you have laid your axe at the very root of the evil. This is sound doctrine, if the premise upon which the conclusion is based is valid! Since the practical importance of this doctrine is very great, it is desirable to examine the premises with care.

The attack of every scientific problem resolves itself essentially into considerations concerning the method and considerations concerning the interpretation of the results. The method employed by Goddard may be called the method of pedigree investigation by field workers. "In the preparation of the cases to be investigated, the field worker made the acquaintance of each child, prepared a sheet

containing his picture and the facts about him, so as to avoid any possibility of confusion when she came to talk to the parents. On these sheets were also all the addresses that the institution possessed of members of the family. Her instructions as she went out were in the main, those that were later embodied in Bulletin No. 2 of the Eugenics Record Office. She carried no questionnaire or blank to be filled out, but rather was given general direction as to what to inquire for. The reason for this is that a questionnaire too often elicits a definite answer, when as a matter of fact, there is no definite answer to be given. We deemed it wiser to explain to people as well as possible, the purpose we had in view, and then allow them to talk, directing their conversation along certain special lines, such as to bring out the facts in regard to any member of the family who might be feeble-minded, alcoholic, insane, or dependent upon charity, etc., or on the other hand, who might be free from any or all of these. * * * The field workers were instructed to record as far as possible the exact words of their informant, not of course the whole conversation, but the salient features. They were to do this rather than to give us their interpretation of what they heard. They of course also gave us their impressions but these were sent to the laboratory every few days, whenever a case was finished, or if a long case, at least every week. We felt it was neither economical nor desirable to require the field workers to make a daily report or in any way to encumber them with clerical work. They made rough family history charts in the field and sent them in with their reports. Later it was found desirable for them to make these charts on a large scale, that is, without crowding individual symbols, leaving room to record on the chart beside each symbol facts in regard to the individual represented by that symbol * * * As a rule, our workers have easily been able to decide the mentality of the persons they saw. In some cases, indeed this was not so easy and only after much observation and questioning of neighbors and friends as to the conduct and life of these persons was it possible to come to a reasonably satisfactory conclusion. In many cases it has been impossible to decide even after all our care; and these cases are therefore left undetermined. In regard to the persons not seen, and especially those of earlier generations who are no longer living, the task at first seems more difficult. Some even assume that it is impossible to determine the mentality of such cases unless they were commonly recognized as imbeciles. That such is not the fact, however, will become evident from a little thoughtful consideration. It must be remembered that the field worker goes out with a background of knowledge of four hundred feeble-minded boys and girls, men and women, of all grades of intelligence, and a great

variety of temperaments and hereditary influences. With this background it is possible to project any individual into a known group and decide that he is or is not like someone in the group. This of course must not be done, and is not done, by any superficial resemblance but on the basis of many fundamental characteristics." (pp. 24-27).

Such is the method. Even when presented most sympathetically, many objections occur to one. The exact estimation of mentality in adults is extremely difficult at best. The habit of economic dependence and actual poverty so weaken imitative and self reliance that such persons appear to the unskilled to be actually deficient mentally. In judging of the dead, definite conclusions are still more precarious. Even granting that the social judgment '*weak-minded*' or '*simple*' is justly applied in any particular case, no valid inference can be drawn with regard to heredity. Because the feeble-mindedness may be due to an encephalitis, or hemorrhage of the brain at birth or any of the many organic pathological causes which may lead to profound mental arrest. Before one is justified in concluding that feeble-mindedness is due to the action of germ cell determinants which behave in accordance with a definite law which holds for the transmission of certain traits in plants and animals, the more obvious hypothesis that mental deficiency is the result of brain damage caused by the action of definite pathological causes, must be carefully excluded. We know that certain disease producing organisms (e. g., the *treponema pallidum*) are transmitted from parent to offspring. Evidence is accumulating to show that this organism is responsible for a very considerable percentage of feeble-mindedness. Until definite diseases of the central nervous system have been excluded by a competent and thorough neurological examination, no one is at liberty to conclude that any given case of feeble-mindedness is due to inheritance. The bearing of this comment upon the method used by Goddard should be sufficiently obvious. His method of pedigree investigation by field workers is inadequate to do more than "spot" cases of familial feeble-mindedness. But since the method gives no information about organic pathology of the subjects, no inference can be drawn as to causes. But Goddard asserts that heredity is the cause for the reason that he finds the same or similar mental conditions occurring in successive generations of the same family stock. He overlooks the possibility of placental transmission of disease organisms and the possibility of new infections in succeeding generations because of the promiscuous sexual relations.

The psychologists and administrators who are dealing with the problem of feeble-mindedness tend to overlook the importance of pathological changes in the brain. This is evidenced by the fact that

laboratories for the study of brain pathology are not usually considered as essential parts of the institutions for the care of the feeble-minded. Undoubtedly, there has been a change in the direction of interest within recent years from the older pathological point of view to the newer psychological point of view. As a corrective to what seems to the writer to be an over-emphasis upon psychological and general biological considerations, the results of an investigation of the brains of one hundred cases of mental defectives by Dr. A. W. Wilmarth,³ is of importance. After presenting the findings at the autopsies, Dr. Wilmarth says, "In closing, I would briefly call attention to the comparatively large number of cases of actual cerebral disease, in contrast with the relatively small number where imperfect development seems the causative agent of the mental defect." I cite some of the commoner pathological findings:

Sclerosis with atrophy.....	12
Sclerose tubereuse.....	6
Diffuse sclerotic change.....	7
Degenerative changes of vessels.....	15
Hydrocephalus.....	5
General cerebral atrophy.....	2
Non-development.....	16
Infantile hemorrhage.....	1
Adhesions of membranes (meningitis).....	3
Angiomatous changes of cerebral vessels.....	1
Glioma (with sclerosis).....	1
Porencephaly with non-development.....	1
Hypertrophy of skull.....	6
Acute softening.....	2
Demi-microcephalus.....	2
Hypertrophy of brain with simple type of convolutions.....	2

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It appears from this study of Dr. Wilmarth's that well-known pathological changes were present in eighty-two of his one hundred cases of mental defects. The early date of this work (1890) makes it entirely probable that microscopic methods of investigation such as are in use at the present time would demonstrate characteristic pathological changes in most of the remaining eighteen cases, in which there were no gross changes apparent.

³Alienist and Neurologist. Vol. II, pp. 520-533. 1890.

The work of Dr. Goddard is unsatisfactory in his discussion of two of the most commonly accepted causes of feeble-mindedness, namely, the effect of alcoholism and syphilis. The obvious motive for this systematic attempt to under-rate the importance of these two factors, is to clear away the objection which might be raised from this side to the importance of Mendelian inheritance. Dr. Goddard is at great pains to interpret his statistics which bear upon the influence of alcoholism by trying to show that the alcoholism is the effect of feeble-mindedness and not the cause. He assumes that feeble-mindedness diminishes control and as a consequence of diminished control, the feeble-minded individual is more prone to alcoholism than is the normal individual. This section of the book is not only unsatisfactory from the point of view of strict scientific method, but it also gives one the impression of rather labored special pleading. With regard to the other causative factor, the importance of which is systematically minimized by the author of this book, we are now possessed of very conclusive evidence which goes to show that syphilis is responsible for at least 25% of all cases of feeble-mindedness. The evidence for this conclusion is derived from a study of the Wassermann reaction as applied to the blood serum and spinal fluid of feeble-minded children in institutions. This is not the place to give a systematic review of the literature of this subject. I shall, however, cite the results of several of the more important articles which have appeared in different parts of the world within the last three or four years. There is but one dissenting result in the list, and there are doubtless local reasons for this difference of opinion.

Raviart, and others⁴ found the reaction positive in 30% of 246 investigated.

Krober,⁵ found the reaction positive in 11% of 262 cases.

Fraser and Watson⁶, found the reaction positive in 50% of 105 cases.

Chislett,⁷ found the Wassermann reaction positive in 9 out of 20 cases.

Dean,⁸ obtained 15.5% of 330 cases examined. Dean's results

⁴Raviart, G., Breton, M., G. Petit et MM. Gayet et Cannac, Reaction de Wasserman et Alienation Mentale. *Revue de Medicine*. Vol. 28, 840-853, 1908.

⁵Krober, Emil, Beitrag zur Frage des ursachlichen Zusammenhangs der Syphilis mit der Idiotie. *Medizinische Klinik*, Vol. 7, 1239, 1911.

⁶The Role of Syphilis in Mental Deficiency and Epilepsy. *Journal of Mental Science*, 59, 640-651.

⁷Syphilis and Congenital Mental Defect, *Journal of Mental Science*, 57, 499-506.

⁸An Examination of the Blood Serum of Idiots by the Wassermann Reaction, *Proceedings of Royal Society of Medicine*, June, 1910, Vol. 3, Pt. 2, Neurological Section, pp. 117-124.

show that the percentage of positive reactions decreases rapidly with the age of the patient. This is shown clearly in the following table:

Age of Patient.	Number Examined.	Number Positive Reactions.	Per Cent Positive.
5-10 years	94	20	21.27
11-15 years	142	24	16.9
16-20 years	66	4	6.06
21-30 years	24	3	1.25
31-44 years	8	0	0

Thomsen⁹, and others, on the other hand, found only 1.5% of positive reactions upon some two thousand imbeciles, epileptics, blind and deaf mute individuals.

In view of the showing of the other investigators I have cited, it seems reasonable to suppose that the results of Thomsen and his co-workers are to be interpreted as due to special local conditions which are peculiar to Denmark. Undoubtedly, there are considerable local variations in the prevalence of syphilis throughout the world. The English and the German and the French peoples are known to be especially prone to this disease. In view of these facts, the author is of the opinion that Dr. Goddard has not given sufficient weight to this factor in the causation of feeble-mindedness.

As for the importance of Mendelian inheritance, it is as yet too early to draw any valid conclusion. There are two important objections to the theory as it is applied to the problem of feeble-mindedness at the present time. First of all, there is no justification whatsoever for considering feeble-mindedness a unit character in the same sense that tallness or dwarfness of peas, or the color coat of guinea pigs, or brachydactylism in man may be considered unit characters. Feeble-mindedness is a composite of many psychophysical reactions just as is the normal human mind. It is extremely unlikely that so complex a thing can possibly be considered a unit character. The second fundamental objection to the Mendelian hypothesis is the neglect of known pathological causes which produce feeble-mindedness. The results of Dr. Wilmarth and the results of the Wassermann reaction show conclusively that at least 75% of all cases of feeble-mindedness are due to gross and microscopic pathological causes. If this conclusion is sound it follows that the ratios established by the Vine-

⁹Thomsen, Oluf, Boas, Harold, Rodil, Hgort, Leschly, W., Eine Unterscushung der Schwachsinnigen, Epileptiker, Blinden und Taubstummen Danemarks mit Wassermannische Reaktion. Berl. Klin, Wocherschrift No. 20, Vol. 48, pp. 891-892, 15 Mai, 1911.

land workers must be erroneous. They are due, in the opinion of the writer, to an uncritical application of their method and also to the operation of that more general fallacy, the idol of the den.

It is much to be hoped that the psychological point of view, the biological point of view and the pathological point of view may be combined in some institution for the study of the problem of feeble-mindedness. The three methods are co-ordinate methods of research and they should be used in co-operation with one another. Serious errors arise when one method is over-emphasized by the exclusion or the neglect of the others. A study of eugenics has undoubtedly contributed important results to the control of feeble-mindedness. By itself alone, however, it is inadequate to solve the fundamental problems.