sequence of scientific findings and developments, two great difficulties would immediately become apparent. First, the foundation would be assuming responsibility for formulating policy in areas which extend far beyond its authority for regulation and enforcement. It is quite true that, within carefully defined limits, other federal agencies have both scientific activities and regulatory powers; pure food and drug laws and various other safety measures are examples. But the foundation does not have regulatory authority; it can only advise.

If it did have regulatory authority, the second difficulty would arise. The concentration in a single agency of such colossal power over the whole course of science would almost certainly alienate the general scientific support that is essential for the foundation's success.

There have been several attempts in past decades to establish a federal department of science or, through other means, to bring about strong central coordination of federal scientific effort. Every one of these efforts has failed. In discussing the attempts and the reasons for their failure, A. H. Dupree has analyzed the requirements for a successful central coordinating agency. Among the requisites, such an institution would have to have "not only a legal authority within the government, but a moral authority with all the estates of science in the country and a position of honor among the great scientific societies of the world. . . . In the twentieth century, government research became so colossal that by its use of funds and personnel it could control the dynamics of the other estates of science. With this dominant position, the approbation of all science became an absolute necessity. To be truly representative of the varied interests of the professional natural scientists, engineers, and social scientists who demand a voice implies a certain amount of independence in the face of the government's interests. The need for reconciliation of the government's legitimate demand for responsibility and the scientists' essential stake in independence is one way of stating the unsolved dilemma of all attempts at central scientific organization" (*13*).

If Dupree's analysis is sound, an attempt by the foundation to adopt as strong a role as some of its critics seem to demand would guarantee its collapse and failure.

The National Science Board appears to have recognized this danger, for it explicitly rejected the belief "that government can and should direct the course of scientific development in this country." In commenting on this decision, the chairman of the board wrote: "It is clearly the view of the members of the National Science Board that neither the National Science Foundation nor any other agency of the Government should attempt to direct the course of scientific development and that such an attempt would fail. Cultivation, not control, is the feasible and appropriate process here" (*14*).

Over-all Appraisal

Each friend and each critic of the foundation is entitled to his own appraisal of how well it has done, of how the progress of science has been influenced by the foundation's existence, and of how well it has measured up to his expectations. On the basis of a fairly close acquaintance, since 1946, with the problems of bringing the foundation into being and getting its activities started, I feel more complimentary than critical. If the pace of development has sometimes seemed slow, that is less important than the direction of movement, and the foundation has moved progressively in what seem to be desirable directions. If the pace has seemed slow, one must also remember the puzzling problems of a new federal agency that was established with some doubts about its necessity and some limitations on its activities. If, in spite of these difficulties, one wants to be severely critical, he should have a well-thought-out answer to the question of how he, under similar circumstances, would have guided the foundation in its first 6 years.

References and Notes

1. National Science Foundation, *Organization of the Federal Government for Scientific Activities* National Science Studies, NSF 56–17 (Government Printing Office, Washington, D.C., 1956).
2. As is required by law, the foundation reports annually to the President, who transmits the reports to the Congress. These reports are published. The first report covered fiscal years 1950 and 1951. The most recent report is the sixth, for the fiscal year 1956. Much of the information that is drawn on in this article comes from the foundation's annual reports.
3. Public Law 507, 81st Congress, the National Science Foundation Act of 1950. The Act includes two additional functions, neither of which, in practice, has been of major importance: to carry out research connected with national defense, when requested to do so by the Secretary of Defense, and to establish such special commissions as the National Science Board deems necessary.
4. D. Wolfle, *Science* 106, 529 (1947).
5. H. Alpert, *American Sociol. Rev.* 20, 653 (1955).
6. Executive Order 10521, dated 17 Mar. 1954, is printed in the foundation's *Fourth Annual Report.*
7. National Science Foundation, *Federal Funds for Science* (Government Printing Office, Washington, D.C.), published annually.
8. National Science Foundation, *Federal Support for Science Students in Higher Education,* NSF 56–18 (Government Printing Office, Washington, D.C., 1956).
9. National Science Foundation, *Sci. Manpower Bull.* No. 6 (1955).
10. Periodic mimeographed reports available from the National Science Foundation.
11. National Science Foundation, *Scientific Personnel Resources,* NSF 55 (Government Printing Office, Washington, D.C., 1955).
12. *Science* 123, 660 (1956).
13. A. H. Dupree, *Science in the Federal Government* (Harvard Univ. Press, Cambridge, Mass. 1957).
14. National Science Foundation, *Fourth Annual Report,* p. viii.

H. H. Goddard and the Hereditary Moron

If the early history of mental deficiency may be said to date from Itard, so its later "vogue" dates 100 years later from Henry Herbert Goddard. From the Wild Boy of Aveyron, at the end of the 18th century, to the modern understanding of mental retardation of today is more than a span of 150 years; it marks the transition from an era of ignorance and callous feeling to one of enlightened human acceptance. And for the last 50 of those years we are most heavily indebted to the "discovery" of the moron. For the heartsick parents of the mentally retarded and their children who never grow up all owe Goddard a debt which far transcends his scientific research and the many social ramifications of his effective publications.

There have been periods when the feeble-minded were considered *les enfants du bon Dieu,* and others when they were thought to be inhabited of devils. In our time they have been the intermittent objects of faltering scientific inquiry or of maudlin welfare sentiment. Their very designation has moved from such terms as *idiocy,* to *imbecility, feeblemindedness, mental deficiency,* and now an ambiguous *mental retardation,* with

oligophrenia as a self-conscious attempt at a more professional designation.

Coming into this field from the teaching of Westchester (Pennsylvania) Normal School classes in psychology in 1906, Goddard, at the instigation of the superintendent, E. R. Johnstone, founded the first full-time research laboratory on mental deficiency at the Training School at Vineland, New Jersey—a happy personal association of two men of great vision, humanitarianism, and scientific dedication. Well oriented by his Quaker birth and rearing, and deeply inspired by his professional association with G. Stanley Hall and the new child-study movement welling up at Clark University, Goddard felt called to a lifework which was to bring hope to a world where humility and a sense of belonging were to guide his fruitful efforts.

As if the gods were on his side, and he their agent, the Binet-Simon scale appeared on the scene as Goddard was searching for an effective approach to his new endeavors. Translated by him into English, and standardized on a then reasonably adequate American population, this scale brought crucial assistance to his task. At once he became an advocate for the scale and its acknowledged chief American exponent. This opened the way for a new classification of the feebleminded, which in turn illuminated the educational, social, and occupational potentials of the mentally subnormal in ways previously imagined but not very successfully pursued. This also led to a new philosophy of education, based on genetically determined maturational stages of growth, which is today a commonplace doctrine.

At that date the term *feeble-minded* was employed professionally as the generic term for all mental deficiency as well as for its highest or marginal degree; that is, *idiot, imbecile,* and *feeble-minded* were the subdegrees of feeblemindedness. To avoid this ambiguity, Goddard coined the word *moron* for the marginal degree while retaining *feeble-minded* for the generic use only. The term caught on and almost overnight attained such wide popular use as to belittle and confuse its considered technical meaning. Thus was popular interest in mental deficiency stirred, but at the ultimate cost of popular misuse of the word *moron.*

For Goddard, research on mental deficiency now became heavily concentrated on its highest degree, moronity. This did not lead to his ignoring the degrees of idiocy and imbecility nor the clinical varieties of amentia. Rather, at the time, the moron was seen as numerically, socially, and educationally the most serious issue.

The major research purpose of the Vineland Laboratory under Goddard was the study of causes and consequences, a phrase incorporated in one of his major books. Preliminary to such study was the need for information on characteristics, including definition, diagnosis, and classification, as well as management and amelioration. An obvious avenue of attack was the study of hereditary transmission. Here an ambitious attempt was made, with the assistance of a corps of competent field workers, to study the family histories of all the resident "children" of the Vineland institution. Davenport had already made sallies in this direction. The Jukes were already widely known. Overnight from other sources came the Nam family, the Hill Folk, the Ishmaelites, the family of Sam Sixty, and many others. Topping all these, the story of the Kallikak family, later to be mocked through the literature as the Kallikak myth, captured public imagination. The dramatic feature of this story was the stemming from a single sire of two parallel related family strains, one "good" the other "bad." Here again Goddard's flair for word coinage gained attention, so that *Kallikak* entered the language as had *moron.*

This is not the place to moralize or to defend, but I recall becoming closely associated with Goddard at the time that the Kallikak book was published, the Binet scale, a two-volume translation of the Binet-Simon articles, and the word *moron* having already "arrived." Granting the difficulties inherent in such a study and the historical, as well as other, limitations of proof, it nevertheless seems to me grossly improper to laugh this epochal investigation out of court as unjustly and as disparagingly as later "students" speciously did. It became fashionable to decry the methods, the data, the treatment of data, and the inferences. Yet the late Elizabeth S. Kite, the field worker for this extraordinary study, was a historian of excellent repute, with acknowledged social *savoir-faire,* well prepared in family history investigation, a specialist in United States colonial history and the author of several standard historical books, well informed on social and mental evaluation techniques, and with other merits. But the tide of revolt or even revulsion had set in, and not Goddard nor Miss Kite nor the loyal Vinelanders felt it seemly or politic to do more than let the disparagement run its ungenerous course.

Then came *Feeble-Mindedness; Its Causes and Consequences,* the arduous summary of all the Vineland field studies. Among these at least two other major-strain histories were left in manuscript, notably the Jackson-White study among the New Jersey Ramapoes and the Kirkpatricks of southwestern New Jersey. "The Pineys" study was published separately by Miss Kite under the auspices of the New Jersey State Department of Charities and Correction. Suffice it here to note that an epoch was deliberately closed, for the moron and the Binet scale had other work to do.

Now followed that period when the Vineland Laboratory expanded into the three departments of (i) psychology, including social work, (ii) biochemistry, and (iii) psychopathology, including neuropathology and morbid physiology. Here Goddard encompassed an all-comprehensive psycho-social-biological framework for a total coordination of human appraisal. Meantime he was reaching out into such related areas as crime and correction, juvenile delinquency, education, industrial efficiency, social pathology, and an over-all social philosophy derived from the study of the mentally subnormal and abnormal. Much of this was summarized in his *Psychology of the Normal and Subnormal,* but not so successfully as he had hoped. Other books and a continuing flow of journal articles and public addresses reflected the enormous productivity of his energy and wide-ranging imagination.

Then came World War I and the sharing in the movement for mental measurement and classification in the U.S. Army, followed by the move to Columbus as director of the Ohio Institute for Juvenile Research and a happy return to teaching at Ohio State University until retirement. Coincidentally his active support of the workshop for gifted children in the city of Cleveland complemented his interest in the mentally retarded.

In so rich and productive a life the obituarial recital of details found in *Who's Who,* or of publications listed in standard bibliographic sources, seems almost irrelevant, however informing and revealing. I am grateful to Goddard as a person, teacher, and many varieties of hero. Generous without stint, he never withheld ideas or data or materials of any kind from one seeking them. He feared no pirating of ideas, having always a mythical pitcher welling with more than he gave away. He was warmly regarded for his honesty, candor, humor, consideration, humility—and sensitiveness. Sought as a speaker, respected as a writer, revered as a teacher, he lived the full, good life. Yet he grieved with deep hurt at the detractions of the thoughtless and the captious.

In a real sense he belongs with and to the moron and the Kallikaks—their best friend and most benevolent proponent.

EDGAR A. DOLL
Bellingham, Washington