

# Autobiography of Lewis M. Terman

Lewis M. Terman (1930)

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### [p. 297] TRAILS TO PSYCHOLOGY

It is not an easy task to give an accurate account of the influences which have worked together to give direction to one's interests and to determine the nature of one's professional output. As a more or less desultory student of biography, I have been much impressed by the daring that biographical writers have sometimes shown in their attempts to psychoanalyze the characters and careers of their subjects. Although a few of the attempts in this field are interesting and more or less plausible, it must be admitted that even the well-documented life, lived in the glaring light of publicity, presents puzzling obscurities. One might suppose that, when the writer is a psychologist and is recounting his own life, the task of presenting a truthful picture would be comparatively easy. Whether such is the case is doubtful. Being a psychologist may help, and analyzing one's own life may be easier in some respects than analyzing another's, but the difficulties peculiar to autobiography may more than offset these advantages. One's memories are not only incomplete; they are also warped by systematic influences that distort the total picture. Memory of a given period of one's life is selective; what finally survives is determined partly by the nature of the events which follow. My present memories of childhood and youth may differ in important respects from what they would have been had I become a doctor or a lawyer or an engineer.



LEWIS M. TERMAN

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In planning a discussion of the factors that may have influenced a career, one's thoughts are likely to turn at once to the college and post-college period and to such possible determinants as teachers, classmates, textbooks, and library exposures, to the neglect of hereditary and early environmental factors that may have set the stage. This procedure, I believe, is never psychologically warranted. In some cases it is possible that the influences of the university period are primary; in other cases it is more likely that the determining factors must be sought farther back. Certainly it would be a mistake to ignore the indications of childhood experiences and preoccupations, even though heredity and environment as causal agents in molding early interests can never be clearly disentangled. That some of the experimental studies have pointed to a high degree of impermanence [p. 298] of interests, I am inclined to attribute to the inadequacy of the methods used. My study of biography and my work with gifted children incline me to believe that the child is indeed often father to the man. My chief anxiety about this series of autobiographies is that too few of the authors will tell me the things I should like to know about their ancestry, their childhood, and their youth. It would be hard to imagine anything more interesting than analyses of their own childhood by psychologists like James, Freud, Adler, Binet, Titchener, Spearman, Watson, or Thorndike.

## HEREDITY AND EARLY ENVIRONMENT

I know of nothing in my ancestry that would have led anyone to predict for me an intellectual career. A statistical study of my forebears would have suggested rather that I was destined to spend my life on a farm or as the manager of a small business, and that my education would probably stop with high school graduation or earlier. I was born in Johnson County, Indiana, January 15, 1877, seventeen miles southeast of Indianapolis. My paternal ancestors, who for several generations had been farmers, migrated from Virginia. My father's father was born in 1794 and was of Scotch-Irish descent. After serving for a brief time as a soldier in the War of 1812, he went westward on horseback from Virginia and settled in Ohio fourteen miles south of Zanesville. This was not far from 1820. He married a young woman by the undistinguished name of Jones, said to be of Welsh descent, and by her had a family of ten children. My father, one of the youngest in the family, was twelve years old when, in 1846, my grandparents moved to Indiana and settled on a farm not far from the border of Brown County, in a region which has always been economically and culturally one of the most backward in the State. There my grandparents lived the remainder of their lives, my grandfather dying in his seventies and my grandmother in her sixties.

My father lived at home until his late teens. He attended rural schools a few months each winter for three or four years and worked on a farm during the summer. At the age of twenty he was employed by William Cutsinger, one of the most prominent farmers in the adjoining county of Johnson, and a man who was known far and wide for his positive traits of character. A year later, in 1855, he married a daughter of this farmer and shortly afterward moved to [p. 299] a farm in the northeast township of the same county. I was the twelfth of fourteen children born of this marriage.[1]

The Cutsingers were "Pennsylvania Dutch" who had migrated from Pennsylvania to Kentucky and thence to Indiana. They had evidently not been in America long before the westward migration, as my great grandfather spoke English only brokenly. My maternal grandmother was of French Huguenot descent and was named Deupree. Her family moved from Kentucky to Indiana at about the time the Cutsingers did. It appears, therefore, that my main lines of descent are Scotch-Irish, Welsh, German, and French.

Of my paternal grandmother's relatives I know nothing. The Termans (sometimes spelling the name as Turman or Tearman) are found widely scattered from coast to coast and are rather numerous in some of the eastern and middle-western states. The Cutsingers, with less disposition to rove, have remained for the most part in central Indiana. Previous to my own generation, I do not know of a Terman or Cutsinger who belonged to any of the professions or who had graduated from college. Those of the present generation usually go to high school and college and are finding their way into business or teaching. The Deuprees (the name sometimes written Dupré or Dupree) probably represent a rather superior strain; they had risen

to some prominence before they left France at the time of the Huguenot persecutions and have done better in America than most of the other branches of my family.

Although my father was regarded by our neighbors as prosperous, the family was so large that the reputed prosperity was more illusory than real. There was no lack of the ordinary necessities, but there was little surplus for luxuries. In the household library there were probably a hundred and fifty or two hundred books, including a set of the *Encyclopaedia Britannica* which belonged to my older brother. Among the books which I was especially fond of reading were Hans Andersen's stories, *Robinson Crusoe*, a book on Arctic and African travels called *The World's Wonders*, the novels of Cooper and Dickens, the Bible, the *Encyclopaedia Britannica*, a pocket atlas, and *Peck's Bad Boy*. Unlike the authors of most autobiographies, I had never heard of Plutarch and did not care for *Pilgrim's Progress*. I think there was nothing in my early environment that could be [p. 300] said to have conditioned me very specifically in favor of psychology. My reading did not, nor were my interests consciously shaped in this direction by any of the members of my family. My father read a good deal, but chiefly in newspapers, magazines, the Bible, and a few miscellaneous books. He was not very social, rarely attended church or other neighborhood gatherings, and showed little interest in persons outside the family. He was self-sacrificing, just, and infinitely kind. He was extraordinarily fond of children and was adored by them. One of his outstanding traits was an obstinate persistence in completing any task he had undertaken. My mother read somewhat less than my father, had more social interests, was less calm, and vacillated between extremes of happiness and sadness. She was devoted to her children, but did not understand them as well as my father did. An older brother and two sisters, one older and one younger, were teachers; but, as teaching was about the only avenue of escape for the youth who aspired to anything beyond farm life, the desire to teach cannot be taken to indicate any special psychological bent.

Doctors and ministers probably tend to have more than the usual amount of psychological interest and insight, but there was no one in either of these professions among my relatives. Gossip has been called the beginning of psychology, but I had little of the training it is said to afford. However, my brothers and sisters had a keen eye for the peculiarities of others and were accustomed to mimic and make jokes about them. To this day our family reunions are enlivened by hilariously funny reminiscences about the eccentricities of persons we knew as children. The extent to which this has always been indulged in by my family may have helped just a little to give a psychological twist to my interests.

Whatever the cause, almost as far back as I can remember I seem to have had a little more interest than the average child in the personalities of others and to have been impressed by those who differed in some respect from the common run. Among my schoolmates or acquaintances whose behavior traits especially interested me were a feebleminded boy who was still in the first reader at the age of eighteen, a backward albino boy who was pathetically devoted to his small sister, a spoiled crippled boy given to fits of temper and to stealing, a boy who was almost a "lightning calculator," and a playmate of near my own age who was an imaginative liar and later came into national prominence as an alleged swindler and multi-[p. 301]murderer. I am inclined to think that the associations which I had with such schoolmates were among the most valuable of my childhood experiences.

The school instruction I had was very inferior, if judged by present-day standards. My elementary education was obtained in a one-room. "little red schoolhouse" which could not boast a single library book. My teachers of that period were all men, not one of whom had at that time attended school beyond the eighth grade. However, I think most of them were superior in natural ability to the average elementary teacher of today. Two of them later became physicians and another a lawyer.

I entered this school three months before my sixth birthday and at the end of the first term of six months was promoted to the third grade. I "learned by heart" easily and habitually memorized most of the contents of my textbooks, including biographical footnotes in the history text and tables of populations and areas in the geography. The school day was long, there was no supplementary reading available, and the time had to be put in somehow.

I attended the same school until I was thirteen, although completing the eighth grade a year earlier. As there was no high school within reach of my home, I continued to do "post graduate" work with more advanced texts in the common branches during parts of two additional winters, but at a different school, taught by one of my brothers who had attended college. Another pupil in this last-mentioned school of thirty children was Arthur M. Banta, later to become a starred scientist in biology.[2]

Until the age of eleven, my vacations, amounting to between five and six months each year, were spent in unsupervised play, often alone but sometimes with other children of the neighborhood. The majority of my neighborhood playmates, far from providing any stimulus to intellectual development, were of the type that rarely completes the eighth grade. This, however, did not lessen my interest in them, as I admired them for their superiority in everything that called for strength, agility, or skill. Neither from my playmates nor from my teachers or parents did I learn much about natural phenomena. The names of a few of the more common trees, plants, animals, and birds were, of course, learned incidentally, and the major processes of farm life were of [p. 302] necessity familiar, but I made no collections except of Indian relics, and engaged in no very systematic observations of nature.

The spring after I was eleven years old I began "making a hand" with team, plow, and wagon. Thereafter, until I was eighteen, I worked on the farm about six months each year, sometimes not losing a single week-day between April and September. As the day lasted from about five A.M. until seven or eight P.M., With only an hour off at noon, any mental development that may have occurred during this part of the year must have been due to maturation rather than to intellectual stimulation. My willingness to work was not due to any particular liking for farm life itself, nor was it primarily the result of a reasoned sense of duty. The things I had to do seemed, on the whole, pleasant; my plans to escape from the farm were motivated entirely by my desire to get an education. For the farmer boy of 1890 in Indiana, to get an education meant, first of all, that one must prepare to teach school. That step accomplished, it was possible to earn one's way through college and to enter a profession. Not to teach meant to continue forever ploughing the same fields, doing the same chores, and getting nowhere.

Preferences among school studies sometimes afford a clue to natural interests. In my own case, when I attended the rural school, almost every subject at one time or another held first place. I remember clearly that this was true of arithmetic, history, geography, physiology, and grammar. Later, in normal school and college, I preferred German, Latin, history, English, pedagogy, and psychology to mathematics or the physical sciences. When I studied botany, zoology, geology, physics, and chemistry, I enjoyed learning principles, and got my lessons well enough to earn good marks, but I made only the required collections of rocks and plants, had little interest in botanical classification, and never felt quite at home with laboratory apparatus. In this respect I presented a marked contrast to my boyhood classmate, Arthur M. Banta. The difference between us was clearly evident by the time we were fifteen or sixteen years of age. He was less contemplative, less bookish, and, I think, less interested in the traits of people; on the other hand, he was far more interested than I in plants, animals, and rocks. Unfortunately, no school compositions remain to tell the story of my early interests. In all my life I have never written more than two-score compositions, and of these exactly one was written before I reached the age of fifteen years.

In the school I attended and in the neighborhood where I lived [p. 303] there was a dearth of boys of my own age, and nearly all my playmates were three or four years my seniors. This cut me off from any possibility of becoming a leader in the social groups to which I belonged. I rarely took the initiative in deciding what should be done or how it should be done. As most of my playmates could run faster, jump farther, dive deeper, throw a ball farther, wrestle more skillfully, and swear more nonchalantly, I came to feel that I did not count very heavily in their activities. Whether for this reason or not, I developed toward older and bigger boys an attitude that ranged from respectful deference to admiration and awe. That I excelled most of them in school work as much as they excelled me in play did not fully compensate.

In such circumstances we have the soil for the development of inferiority attitudes and

tendencies to introversion. My inferiority feelings, fortunately, were confined chiefly to playground situations, but my introvert tendencies still show in a very extreme score on the Bernreuter and Laird introversion-extraversion tests. In this I may not be particularly exceptional among psychologists; the introvert's tendency to become introspective and to concern himself with the motives, abilities, and personalities of others would seem to favor the development of psychological interests. When I was nine or ten years old, a book peddler stopped at our home for the night. This one was selling a book on phrenology, the author of which I have forgotten. That evening, while we sat about the fireplace, the stranger discoursed on the science of phrenology and "felt the bumps" of each one in the family. Perhaps I remember the incident so well for the reason that when it came my turn to be examined he predicted great things of me. I think the prediction probably added a little to my self-confidence and caused me to strive for a more ambitious goal than I might otherwise have set. At any rate, I was greatly impressed and for several years thereafter was much interested in phrenology. As my older brother bought a copy of the book, I finally became familiar with its contents and believed in phrenology until I was fourteen or fifteen years old. This was my introduction to the science of individual differences and the diagnosis of personality.

By the age of ten or twelve, or perhaps earlier, it is probably not so very uncommon for a child to develop an interest in his conscious life and to engage in introspective plays. Before I had reached the teens I was often preoccupied with such phenomena as after-images, [p. 304] the flight of colors, and the association of ideas. My older sister and I sometimes played a kind of game which consisted in starting with a given word and calling out successive words, each associated with the word preceding, until all evident connection with the initial word had been lost. The point of the game was to get as far as possible from the starting point in the shortest possible time, but to be able to explain each transition as natural and logical.

When I was eleven or twelve years old I hit upon the fact that by the monotonous repetition of a formula I could entirely lose my sense of personal identity and my orientation in time and space. My method was to gaze fixedly at something and repeat the formula "Is this me? -- Is this me? -- Is this me?" or sometimes "Am I living? -- Am I living? -- Am I living?" until all distinction between the subjective and the objective was lost in a kind of mystical haze.

I remember with considerable clearness the following psychological experiment which I made not far from the age of eleven years. The incident is fairly definitely placed in time, as it occurred in a vegetable garden which was no longer used as a garden after I had reached the age of twelve, and the nature of the experiment was such as to favor its retention in memory beyond all ordinary events.

I was pondering over the fact that, of the countless visual impressions which one experiences, the majority vanish quickly and none ever remains so indelibly fixed in memory as to be recallable in all its details. Can it be that there is no such thing as complete and permanent memory? I decided to find out. My method was to select a small object and gaze at it so long and intently that the exact "picture" of it would *never*, so long as I lived, fade from my memory. After casting about for a suitable object, I selected a small bit of material that lay on the north side of a potato hill from which I had just forked the potatoes. It resembled, as I now recall it, a piece of semi-decayed straw or cornstalk; it was about a quarter of an inch long, had a brownish yellow color, and was shaped something like a tadpole with the tail downward. As I gazed at it, I kept repeating to myself "This time I will never forget -- I must remember it -- I *will* remember it if I live to be a hundred years old," and so on probably for several minutes. Even yet the image of this object seems fairly distinct and the details as I have described them fairly certain, but one who has made any study of the behavior of memory images will of course be very skeptical of the accuracy of my long-delayed report! Whether my experiment was successful or not, the [p. 305] reader can imagine with what interest I served as a subject, sixteen years later, in exactly the same type of experiment conducted by my classmate, Kuhlmann, in the psychological laboratory at Clark University. [3]

I trust the reader will not accuse me, because I have recounted these experiences of my early years, of trying to prove that I was a "born psychologist" and destined from childhood to

preoccupation with things psychological! It is possible that such experiences are too common to have very great meaning for later development, though, conceivably, they are indicative of a predispositional personality trait that may have tipped the balance occasionally in the myriad of choices necessary to give my life the course it has had.

## NORMAL COLLEGE AND TEACHING

When I was fifteen years old, my parents sent me to Central Normal College, Danville, Indiana, to prepare for teaching. I attended school there thirty weeks that school year (1892-1893) and twenty weeks the following year, returning to the farm for the intervening summer. During the winter of 1894-1895 I did my first teaching, in a rural school of the type I had attended as a child. The next year I went to Danville again and remained for forty-eight weeks, completing with the degree of B. S. what was called the "Scientific Course." The next winter (1896-1897) I taught another country school and in the spring went back to Danville for eighteen weeks to complete the so-called "Pedagogy Course," which gave me the high-sounding title of B. Pd. But two degrees were not enough, and, instead of teaching the following year, I borrowed money to remain at Danville for still another year of forty-eight weeks and complete their "Classical Course" with the degree of A. B.

This brings us to the summer of 1898, when I was twenty-one years old. In all, I had attended the Central Normal College for a hundred and sixty-four weeks, or the equivalent of about four and a half ordinary school years. Except for a few additional correspondence courses in German and in the history of education, this was all the formal training I had, beyond the country school, until I entered the junior year at Indiana University, in the autumn of 1901. From 1898 to 1901 I was principal of a township high school [p. 306] in my home county, where I taught the entire curriculum of a four-year high school to about forty pupils.

Thus chronicled, the eleven formative years from 1892 to 1903 look pathetically barren. Actually, they were not so bad, although about as different as anything could be from the corresponding years in the youth's life of today. Judged by formal current standards, the training offered at Central Normal College may seem to have been very shoddy. With ten-week courses taught by wretchedly paid teachers whose weekly schedule of classroom instruction ranged from twenty-five to thirty hours, thorough work was out of the question. "C. N. C.," as we fondly called it, was one of several private normal schools of its type which sprang up like mushrooms in the Middle West during the seventies and eighties of the last century. These schools flourished in much their original form until the first decade of the present century. They took raw country boys fresh from the grammar school and in a few ten-week terms made them into teachers. They asked of the entering student no credentials and they lavished their degrees upon him when he departed.

Nevertheless, these schools filled a gap in the school system and served a useful purpose. In the Mississippi Valley at that time high schools were few and poor, and, because of bad roads, were inaccessible to students beyond a radius of three or four miles. Young people who could not complete a high-school course and go to the better colleges and universities would have been educationally stranded but for the opportunities such schools offered. Moreover, the instruction they gave was for the most part supremely good, despite the poor pay and overwork of the teachers. It had to be good in order to draw students by the thousand from distant parts of the country. In reality, my Danville teachers were among the ablest classroom instructors I have ever had; masters of the art of teaching. They were alert, witty, stimulating, and amazingly well informed. The four teachers from whom I learned most would probably be hard to match in any first-rate college of today. Charles A. Hargrave, who taught most of the science courses, was a gifted naturalist of the Alexander Humboldt type and, like him, largely self-taught. Gustave Spillmann, an accomplished linguist of Swiss descent, taught Latin, Greek, German, and French. The teacher of psychology, philosophy, logic, and ethics was Jonathan Rigdon, a former student of Borden P. Bowne at Boston University and a disciple of Hegel. He later took his Ph.D. degree at Boston University. The courses [p. 307] in pedagogy, methods, and the history of education were taught by A. J. Kinnaman, who had imbibed Herbartian doctrines from the fountain at Jena and had taken a doctorate of pedagogy at New York University. As the



latter degree was not then regarded as quite respectable, he later went to Indiana University for his M. A. degree and to Clark University for his Ph.D. At Clark he did as his thesis a very meritorious research on "The Mental Life of Two Macacus Rhesus Monkeys in Captivity."

Among the textbooks which I studied under Rigdon were Sully's *Outlines of Psychology*, Dewey's *Psychology* (written in the author's early twenties), Weber's *History of Philosophy*, Bowen's *Logic*, and Bowne's *Ethics*. At about the same time I read, more or less independently, Höffding's *Philosophy*, several volumes of Herbert Spencer, James's *Principles of Psychology*, Darwin's *Origin of Species* and *Descent of Man*, Huxley's *Lectures*, Haeckel's *The Riddle of the Universe*, several pamphlets by Tyndall, Brinton's *Religions of Primitive Peoples*, Tom Paine's *Age of Reason*, and the lectures of Robert G. Ingersoll. I had to read James more or less surreptitiously, as Rigdon scorned the literary flavor of his writings and scolded us if we dared quote from them! With Kinnaman I studied Herbart (as expounded in Charles A. McMurry's *The Elements of General Method* and De Garmo's *The Essentials of Method*), Rousseau's *Émile*, Locke's and Spencer's essays on education, Quick's *Educational Reformers*, Painter's *History of Education*, Mahaffy's *Old Greek Education*, and Oscar Browning's *Educational Theories*. Represented in my browsings of this period were snatches from Aristotle, Plato, Hume, W. T. Harris, and Paul Carus. Up to the time I left Central Normal College in 1898 I barely knew of Galton, Wundt, and Hall, and, so far as I can recall, had never heard of Binet or Cattell.

It is perhaps fortunate that two of my favorite teachers, Rigdon and Kinnaman, held decidedly opposite views, Rigdon being an Hegelian and Kinnaman an Herbartian. Their clashing opinions, when one of them was quoted to the other in class, gave an atmosphere to the classroom that was tense and exciting. The more thoughtful of the students, of course, took sides. I became for the time being an enthusiastic Herbartian, perhaps because I thought I could understand Herbart and could see nothing but words in Hegel. The situation was, at any rate, more stimulating than it would have been if all my teachers had been steeped in the same philosophy. "Child [p. 308] Study" was only beginning to be heard of; there were yet no textbooks on the subject, but once or twice I heard it mentioned in teachers' institutes as something very new and very significant for education. Of the psychology texts which I studied at this time I liked Sully, found Dewey obscure and rather dry, and was completely fascinated by James, which, unfortunately, I did not discover until my last year and could not then afford to purchase.

Danville in that day attracted a surprisingly large number of gifted young men and women. My first roommate was Logan Esarey, now Professor of American History at Indiana University and a recognized scholar in his field. The others were Arthur M. Banta (already mentioned), Oren S. Hack (now a prominent attorney in Indiana), and Elmer Thomas (now United States Senator from Oklahoma). Some of my very closest friends were Frederick N. Duncan, who later took his doctor's degree in biology and taught in various southern colleges; P. C. Emmons, now Superintendent of Schools at Mishawaka, Indiana; H. S. Simmons, now director of a teachers agency; and Bert D. Beck, who entered the ministry and became a doctor of divinity from Boston University.

Two other influences of this period deserve to be mentioned. One of these came from the Teachers' Reading Circle books which each year were adopted for state-wide use. For a given year there were two or three books which every teacher was required to purchase and study. In fact, the books were purchased for us and the cost deducted from our salaries. One Saturday each month all the teachers of a township (in my township there were nine) met at one of the schoolhouses for an all-day institute session. The greater part of the day was devoted to discussion of the Reading-Circle books, a definite assignment being made to each teacher a month in advance. Thus, during the five years of my teaching prior to entering Indiana University in 1901, I read and studied rather minutely twelve or fifteen books on education or psychology. Among them were Arnold Tompkins' *Philosophy of Teaching* (of Hegelian flavor), W. T. Harris' *Psychological Foundations* (also Hegelian), Ruskin's *Essays*, Hughes' *Dickens as an Educator*, Bryan's *Plato the Teacher*, and James's *Talks to Teachers*. The last two books interested me profoundly. Bryan's attractive presentation of Plato made me want to take up the serious study of philosophy, and Talks to Teachers greatly intensified my interest in the



psychological aspects of education. Turning through my old copy of this book, I find that my [p. 309] marginal notes made at that time are especially numerous in the following chapters: The Necessity of Reactions, What the Native Reactions Are, The Laws of Habit, Memory, Apperception, and The Will. The chapter on memory has by far the most. I am inclined to think that the influence of the Reading-Circle books was real and lasting, for they helped to give me both a philosophical and a psychological interest in education. Henceforth teaching was not simply a means of earning a living or of providing funds for an additional year at college, but a profession of intrinsically absorbing interest.

The other influence of this period came from marriage and the birth of my first child. In 1899, a year after I left Central Normal College, I was married to Anna B. Minton, a teacher whom I had met at Danville three years earlier. She had begun teaching at even an earlier age than I, had come under the influence of the same teachers at Danville, and had exactly the same objectives for me as were already shaping themselves in my own mind. Less than a year later, our first child was born, bringing a new and vast psychological interest into my life. My wife reminds me (I had forgotten it) that two to three years later, while a student at Indiana University, I told her my interest in our baby had determined me to become a psychologist. Whether or not the influence was so decisive as this would indicate, it is certainly true that I was introduced to the child-study movement at a psychologically favorable time in my life.

## INDIANA UNIVERSITY

In 1901 I was able to borrow the money to carry out my plans for further schooling. By going on, I hoped to prepare myself for a position that would enable me to teach psychology or pedagogy in a normal school or college; failing in this, I could fall back upon a high-school principalship or superintendency of schools. My immediate goal was the A. B. degree from a standard university, with the A.M. as a possibility. The Ph.D. seemed too remote and unattainable to plan for definitely, though I had vague dreams of reaching it sometime.

I chose Indiana University for several reasons. Kinnaman and Spillmann had recommended it to me, as had also several of my old Danville classmates, including Duncan and Emmons. Bryan was there, and I wanted to study with him. Besides, Bloomington was only fifty miles from my home and living there was not too expensive. I had twelve hundred dollars in sight (as a loan) to keep me and my family for two years.[p. 310]

During my two years at Indiana University I took all of the psychology courses offered, a year of neurology, as much philosophy and education as I could get in, third and fourth year German, almost three years of French, a year of sociology and economics, and some miscellaneous courses. In the two years, including summer quarters, I managed by overwork to collect three and a half years of credit and to secure both the A. B. and the A.M. degrees. But I got something more important than grades and degrees. In the classes of Bryan, Lindley, and Bergström I became fired with the ambition to become a professor of psychology and to contribute something myself to the science. Bryan and Lindley were brilliant and inspiring teachers. Bergström was at first disappointing because of his modesty and lack of personal force, but his solid worth soon became evident. He was not only a wizard with apparatus, but an able experimentalist and a scholar. At the end of my first year Bryan was made President of the University and thereafter I had but one class with him.

My chief mentor from the very beginning was Lindley, and I could not have found a better. My indebtedness to him both for instruction and personal encouragement could hardly be overstated. Throughout my second year, while I was doing my master's thesis with him, he gave me an hour's conference every week. Often the hour stretched into two before we parted. Like Bergström, he had only recently returned from a post-doctorate year of study and research in Germany. Through them I was inspired to serious study of Wundt, Ebbinghaus, Kraepelin, and Külpe in Germany; Ribot, Tarde, Binet, and the Charcot school in France; Lloyd Morgan and Galton in England; and James Ladd, Hall, Sanford, Burnham, Cattell, Titchener, and Mark Baldwin in America. My courses with U. G. Weatherly, in anthropology, sociology, and economic theory, were invaluable adjuncts to my psychological program and helped to mold my

life interests. In all my work I had the great advantage of being able to read both German and French fluently before the end of my first year. I studied with Bryan Falkenberg's *History of Philosophy*, Külpe's *Introduction to Philosophy*, and Royce's *Spirit of Modern Philosophy*, and read Ladd's *Philosophy of Knowledge* with a fellow student. In a course taught by L. C. Carson during my last year I read two volumes of Locke's philosophical works, Berkeley's *Theory of Vision* and *Principles of Human Knowledge*, Hume's *Enquiry Concerning Human Understanding*, Descartes' *Dis-<sup>[p. 311]</sup>course on Method*, and most of Kant's *Critique of Pure Reason*. Of these I enjoyed all except Kant, who seemed to me so unnecessarily obscure. But my philosophical interests were rapidly waning in competition with my enthusiasm for psychology, and they never regained their former position.

In experimental psychology the texts were Sanford and Titchener (Volume I, *Qualitative Experiments*). Sanford's text was then but three years old and Titchener's was fresh from the press. Only twenty-two years had passed since Wundt had opened the first psychological laboratory. The newness of the subject had its appeal, but neither that nor the gifted teachers I had could make me enjoy working with apparatus.<sup>[4]</sup> The courses which especially stand out in my memory include the following: with Bryan, ethics, the history of philosophy, and a seminar course with individual reports; with Lindley, abnormal psychology, neurology, animal psychology, a seminar on James's *Principles*, and a seminar with individual reports, besides the personal conferences; with Bergström, experimental psychology, school hygiene, and the history (really the philosophy) of education.

The seminar reports which I prepared almost certainly influenced my later work more lastingly than any of the formal instruction I had. Two reports for Lindley, one on "Degeneracy" and the other on "The Great-Man Theory" caused me to read almost everything I could find in the library, in English, German, or French, on the psychology of mental deficiency, criminality, and genius. My choice of an experimental study of leadership for a master's thesis was influenced partly by the reading I did on these reports, partly by a study of Binet's recently published book on suggestibility, and partly by the articles of Hall and his students in the *held* of child study. The problem was one which gave a chance to do an experimental study without apparatus, to work with children, and to learn something at first hand about the role of suggestibility and imitation in leadership. As a scientific contribution, my master's thesis, although later published in the *Pedagogical Seminary*, was worthless; as a <sup>[p. 312]</sup> contribution to my personal development it fulfilled its purpose ideally.

Among my classmates of the Indiana period who continued to the doctorate in psychology were B. W. DeBusk, M. E. Haggerty, James P. Porter, and Jesse Hayes White.

As my second busy year at Bloomington drew to a close and my funds became exhausted, I was filled with regret at the thought of having to leave my studies for a teaching position. An opportunity came to teach psychology and pedagogy at Central Normal College, but at a salary too low to enable me to pay my debts and save for further schooling. I began looking for a public-school position which would pay better, but before I found one, there came an offer of a fellowship from Clark University. I had allowed Lindley to recommend me for it, at his suggestion, with hardly a thought that it would really be offered me. In fact, I was greatly embarrassed when word came that I had been accepted; I had now two children, I was twelve hundred dollars in debt, and I did not know where I could borrow more even if I were reckless enough to risk it. But Lindley, Bergström, and Bryan all urged me to accept if I could possibly arrange it financially. I laid the situation before my father and brother and they loyally offered to back me to the extent of another twelve hundred dollars.<sup>[5]</sup> My wife courageously approved, and the die was cast. Then, when our boxes were packed for shipping, I received the offer of one of the best high-school principalships in Indiana. Had it come two weeks earlier I should certainly have accepted it, and a very different career would probably have been the result.

## CLARK UNIVERSITY

When I went to Clark in 1903 it was still the American Mecca for aspiring young psychologists. As Bryan, Lindley, and Bergström were all Clark men, I had thought of no other university for

my doctorate. Hall, Sanford, and Burnham were already old friends, for I had read nearly everything they had written and had heard them quoted almost daily in my classes. But I went with a humility that amounted almost to trepidation, expecting to find myself ill-prepared and at a disadvantage in comparison with the others I should find there. I was only partly reassured when Hall, in my [p. 313] first conference with him, let me know that, because of the "splendid training" I had had, and the "fine report" my Indiana teachers had given of me, he was expecting "great things" of me. Had I only known that this was a favorite pedagogical device of Hall's, I should have suffered less from a burdening sense of responsibility during the months that followed!

The Clark of my day was a university different in important respects from any other that has ever existed in America, if not in the world -- in spirit much akin to the German university yet differing from it because of the small student body. It enrolled in all its departments only about fifty full-time students, besides possibly a dozen whose attendance was limited to Saturday classes or special seminars. Possibly thirty of the fifty were there primarily for psychology, philosophy, and education. The informality and freedom from administrative red tape were unequalled. The student registered by merely giving his name and address to President Hall's secretary. He was not required to select formally a major or a minor subject. There was no appraisal of credentials for the purpose of deciding what courses he should take. *Lernfreiheit* was utterly unrestricted. There were professors who proposed to lecture and there were students who proposed to study; what more was necessary? The student could go to three or four lectures a day, or to none. No professor, so far as I could see, kept a class list. Attendance records were, of course, unheard of. No marks or grades of any kind were awarded at the end of the year or semester. One could attend a course of lectures all year without being required or necessarily expected to do the least reading in connection with it. There were no formalities about candidacy for a degree. The student was allowed to take his doctor's examination whenever the professor in charge of his thesis thought he was ready for it. No examination except the four-hour doctor's oral was ever given.

On first entering the University, the student was always advised by President Hall to sample all the courses he thought he might be interested in, and to drop those he cared least for. Students of psychology ordinarily began by taking most of the courses given by Hall, Sanford, Burnham, and Chamberlain, and perhaps a course by Hedge in neurology or physiology. Nearly all the courses started out with an attendance of twenty or thirty, which in some cases was reduced to ten or less before the middle of the semester. A course by Chamberlain in anthropology dwindled to four and finally to two. [p. 314] It might have been one instead of two, only I had stayed too long to drop out without embarrassment.

A professor lectured only three or four times a week and on whatever subject he pleased. *Lehrfreiheit* was as unrestricted as *Lernfreiheit*. There was no effort to make the courses of different professors dovetail. Chamberlain gave only two lectures a week; Burnham three, besides a seminar; Sanford two or three in addition to his laboratory courses; and Hall usually four, besides his weekly four-hour seminar. Burnham's lectures were always read from manuscript and were finished products, ready for the publication which he always postponed. Hall talked from notes, the freshness or staleness of which the student could gauge by the amount of fumbling of papers and by the élan of his delivery. His lectures were like his writings in their wide sweep and their wealth of allusion. Sanford's, on the other hand, were limited in scope and were delivered in a matter-of-fact manner. Those of Chamberlain and Hedge were unorganized and sometimes rambling. One gathered that none of the professors except Burnham considered his lectures a particularly important part of his job. They were there primarily to carry on research and to guide students in research.

I think the Clark situation as I have described it was of almost crucial importance in my development. I have never worked well under the restraint of rules and regulations, and it is hard to imagine a régime that would have been better adapted to my temperament than the one I found at Clark, if régime indeed it could be called. Because I was placed absolutely on my own responsibility, I was able to give my best with unalloyed enthusiasm. It is a method which affects not only the quality of a student's work, but also the nature of his later output. It is

conducive to intense concentration and monographic production, rather than to well-rounded scholarship and the production of systematized treatises of the textbook variety. Clark University can pride itself in the fact that hardly any textbooks have been written either by its professors or by its graduates.

The manner of conducting the library was in harmony with the general spirit of the University. The only formality was that books had to be signed for when they were taken from the building. There were no barriers between students and books. A book did not have to be signed for to be used in the library. Stacks and reading room were combined. Each student could have an entire alcove of perhaps ten by sixteen feet, and a large table, to himself. There he was [p. 315] able to work undisturbed with whatever books he took a fancy to; there he could do his writing if he wished. The library had been endowed separately from the University proper, and so magnificently that in those days it had difficulty in spending its income. No student ever wanted a book that the librarian would not gladly get, whatever the cost and in whatever language it was printed.

The laboratory facilities, in psychology at least, were hardly less generous in proportion to the demands upon them. There was unlimited room, and apparatus was available for almost any type of experiment a student might want to undertake. All this meant much less to me than did the library, where I spent so much more of my time. For me, Clark University meant chiefly three things: freedom to work as I pleased, unlimited library facilities, and Hall's Monday evening seminar. Any one of these outweighed all the lectures I attended.

When Clark students of the old days get together, their conversation invariably reverts to Hall's seminar. All agree that it was unique in character and about the most important single educational influence that ever entered their lives. No description could possibly do it justice; its atmosphere cannot be conveyed in words. It met every Monday evening at 7:15 and was attended by all the students in psychology, philosophy, and education; in my day about thirty in number. Each evening two students reported on work which had occupied the major part of their time for several months. Usually we knew in advance who would hold forth, and an air of expectancy was general. If the reporting student was one whose ability and scholarship commanded respect, we were prepared to listen and learn. If he was an unknown quantity or was regarded with suspicion, we were prepared to listen and criticize. The longer or more important report came first. It was always under way before 7:30 and might last an hour or longer. Ordinarily, though not always, it was read from manuscript. It might be either a summary and review of the literature in some field or an account of the student's own investigation. When the report was finished Dr. Hall usually started the discussion off with a few deceptively generous comments on the importance of the material that had been presented, then hesitantly expressed just a shade of doubt about some of the conclusions drawn, and finally called for "reactions." Sometimes when we were most critically disposed Dr. Hall's initial praise of the report momentarily spiked our guns. Soon, however, a student bolder than [p. 316] the others would dare to disagree on some fundamental proposition; others would then follow suit, and the fat was in the fire. When the discussion had raged from thirty minutes to an hour, and was beginning to slacken, Hall would sum things up with an erudition and fertility of imagination that always amazed us and made us feel that his offhand insight into the problem went immeasurably beyond that of the student who had devoted months of slavish drudgery to it. Then we were herded into the dining room, where light refreshments were served, and by 9:30 or so we were in our chairs listening to another report. Sometimes the second half of the evening was even more exciting than the first half, and we rarely got away before eleven or twelve o'clock. I always went home dazed and intoxicated, took a hot bath to quiet my nerves, then lay awake for hours rehearsing the drama and formulating the clever things I should have said and did not. As for Dr. Hall, he, as I later learned, always went upstairs to his den and finished his day by reading or writing until 1:00 A.M. or later. So inexhaustible was his energy!

If there is any pedagogical device better adapted to put a man on his mettle than a seminar thus conducted, I do not know what it is. To know that his contribution would be subjected to merciless criticism from every angle was enough to arouse even a naturally indolent person to Herculean effort. In preparation for the report, the student was likely to cut all his lectures for a

week or so and to reduce his sleep to half the usual amount. If the report met with general disapproval, it was sometimes followed by a collapse of nerves that would send the poor victim to bed; in one case, by a breakdown that necessitated several months of vacation.

Because of the small enrollment at Clark and the intimate associations which existed among the students, one's classmates were likely to be almost as potent a source of influence as the professors themselves. Among those who attended Clark either one or both of the years I was there were W. F. Book, A. A. Cleveland, Edward Conradi, Arnold L. Gesell, E. B. Huey, James Ralph Jewell, Fred Kuhlmann, Walter Libby, George E. Myers, Josiah Morse, James P. Porter, Jonathan Rigdon (my former teacher), John W. Slaughter, and Charles Waddell. Perhaps my most intimate associations were with Book, Conradi, Gesell, Huey, Kuhlmann, Morse, and Porter. Huey had taken his degree some years earlier and when he returned to Clark at the end of my first year he was fresh from Europe and much occupied with the possibilities of clinical psychol-[p. 317]ogy. He spent many evenings at my house and told me a great deal about developments in psychology on the Continent, and particularly about his contacts with Binet and Janet. Book was at work on his typewriting experiment, and, as he was from Indiana University, I naturally saw much of him. Conradi, who was also from Indiana, lived across the street from me and was doing an experiment on imitation in birds, in addition to his thesis on stuttering. Gesell, who was there only during my second year, was already developing an interest in the kindergarten period. I followed closely Kuhlmann's experiment in the psychology of mental deficiency and served for several months as a reagent in his experiments on memory. Porter had been laboratory assistant at Indiana University during my first year there and had preceded me at Clark by a year. He was completely engrossed in his experiments with birds. Cleveland had begun his experiment in the psychology of chess and for a time carried on daily observations of my infant daughter. Morse had taken his degree the year before I arrived but remained for the two years I was there. Slaughter had taken his doctor's degree with Wenley at Michigan in 1901, and was decent at Clark 1901-1903 and 1904-1905. He was regarded by all of us as by far the ablest member of our group, but he later abandoned psychology.

All of these men helped to give direction to my thinking and their combined influence was doubtless very potent. If my debt to Huey and Kuhlmann has been more lasting than in the case of the others, this is due in part to the increasing similarity of our interests in the years that followed. All in all, the group at Clark between 1903 and 1905 averaged high. The names of at least twelve are found in the 1928-1929 edition of *Who's Who*. As a good many of the group went into education, I find only seven names in *American Men of Science* (1927), of whom two are starred as in the first fifty of American psychologists. Huey, one of the most promising for science, died in 1913.

Besides the students I have mentioned, there were others of excellent ability whose interests were more remote from my own. There were still others who composed what some of the students referred to as the "lunatic fringe," for which Clark in the old days was noted. There was a semi-psychotic Swede who had ridden the trucks of freight trains for three thousand miles in order to study with Hall, only to find himself the imagined victim of dreadful persecutions by Hall and others. There was a tradesman of more persistence than [p. 318] brains who had somehow glimpsed the higher intellectual life and had been struggling for years to win his doctorate. There was a foreign "university tramp" who had already taken three Ph. D.'s in as many different subjects and was then in pursuit of his fourth -- the perfect example of a man educated beyond his intelligence. There were oldish spinsters who made up in enthusiasm for child study what they lacked in feminine charm. Hall's lectures and writings seemed to have exuded a ferment that took effect in all kinds of soil.

Like many other students who went to Clark in those days, I was drawn there largely by the inspiring effect of Hall's writings. I remained pretty much under his hypnotic sway during the first half year. At his suggestion, I made a survey of the literature on precocity and, after some protest, inflicted upon the world a questionnaire on leadership among children; but before the end of the year I had had enough of the questionnaire method. In my effort to find a solid footing for research with gifted and defective children, I was becoming more and more interested in the method of tests and was reading almost everything that had been written on

the subject, including the works of Galton, Binet and his collaborators, Bourdon, Oehrn, Ebbinghaus, Kraepelin, Aschaffenburg, Stern, Cattell, Wissler, Thorndike, Gilbert, Jastrow, T. L. Bolton, Helen Bradford Thompson, Spearman, Sharp, and numerous minor contributions to the growing literature of the field. By the spring of 1904 I had determined to take as my thesis an experimental study of mental tests. Hall had been so kind to me and I owed him such a debt of gratitude that it cost me a heavy soul-struggle to desert him in favor of Sanford as my mentor. When I announced to him my decision he expressed very emphatically his disapproval of mental tests, but, finding that my mind was made up, he finally gave me his blessing and some advice on the danger of being misled by the quasi-exactness of quantitative methods.

It may be of interest to review briefly the situation in America with respect to mental testing when I was planning my thesis investigation in the summer of 1904. Gilbert had published, in 1894, his "Researches on the Mental and Physical Development of School Children," Cattell and Farrand, in 1896, their report on "Physical and Mental Measurements of the Students of Columbia University," Miss Sharp, in 1899, her research on "Individual Psychology," Wissler in 1901, his research on "The Correlation of Mental and Physical Tests," Miss Thompson, in 1903, her "Psychological Norms in [p. 319] Men and Women," and Thorndike, the same year, his monograph on "Heredity, Correlation, and Sex Differences in School Abilities." These were the major experimental studies of mental tests that had been published in America. Kuhlmann's study of the feeble-minded was in press. Thorndike's study of twins did not appear until 1905, but the first editions of his *Educational Psychology* and his *Introduction to the Theory of Mental and Social Measurements* were published in 1904.

Spearman's two notable contributions of 1904 came too late to have much influence on my thesis plans; and, even if they had come earlier, it is doubtful whether my equipment and point of view would have enabled me at the time to profit greatly from them. I shall never forget, however, the impression that those articles made on me -- the dogmatic tone of the author, the finality with which he disposed of everyone else, and his one-hundred-per-cent faith in the verdict of his mathematical formulae. I read both articles through several times, or all that I could understand of them, and was left in a state of suspended judgment. The author's logic appeared to be waterproof, but the conclusion to which it led, namely, that there is "a correspondence between what may provisionally be called 'General Discrimination' and 'General Intelligence' which works out with great approximation to *one* or *absoluteness*," seemed to me as absurd then as it does now. But, if Spearman's logic failed to convince me, the originality of his attack commanded my utmost respect. The impression which Thorndike made on me up to 1905 was somewhat similar, though less extreme. I could understand him better than I could understand Spearman, but my admiration of his independence was tempered a little by the cocksureness with which he tore into "established" psychological doctrine. For a youth still in his twenties, he seemed to me shockingly lacking in a "decent respect for the opinions of mankind!"

My own interest in mental tests at the time was more in their qualitative than in their quantitative aspects. I wanted to find out what types of mental processes are involved in the thing we are accustomed to call intelligence. I therefore selected two groups of subjects of nearly the same age, a "bright" group and a "dull" group, and proceeded to look for tests that would bring out differences in their performances. I did not then realize the extent to which this is dependent upon the intellectual level of the subjects, and I did not fully appreciate the significance of age norms of performance.[p. 320]

After I began the experimental work on my thesis near the end of the year 1904, the testing of my subjects occupied the greater part of my time (some five hours a day) until the following May. The thesis represents, on the whole, the best I was able to do with the equipment I possessed. Whatever its merits or its faults, it was my own work. I selected the problem, devised the tests which I proposed to use, decided almost every detail of procedure, and wrote up my results unaided. The problem was outside Sanford's field; he followed the progress of the experiment with friendly interest but rarely ventured a suggestion.

Everything considered, the Clark period was even richer in experience and stimulation than I

had expected. Hall and Burnham were then at their best. If I had suffered some disillusionment about Hall as a scientist, this was more than made up by the burning enthusiasms which he inspired. Burnham's scholarly and well-rounded lectures gave me a splendid systematic orientation in the field of educational psychology and provided a solid foundation on which to build. His courses in school hygiene and the hygiene of instruction deeply influenced my reading and teaching for more than a decade. From the somewhat erratic but erudite Chamberlain I got little directly, though, partly as a result of my contacts with him, I browsed rather extensively in anthropological literature. The courses I took with Hedge were of limited value, but I got more from his seminar and still more from my personal associations with him. Sanford, the ablest scientist of the group, was something of a disappointment. That he should convert me to the laboratory was hardly to be expected, but I got far less both from his laboratory courses and from my other associations with him than I felt I had a right to expect. In this I was not alone. The truth was that Sanford's tide of interest in experimental psychology was then ebbing. Whether he had lost faith in its value or whether he was in the throes of an inner crisis of some other origin, I do not know. It was probably the latter, for he seemed to have a particularly inhibited personality and was subject to nervous fatigue and states of depression. Nevertheless, Sanford was a man of rare charm and fineness of soul. His scientific objectivity and keen, critical judgment on psychological issues and methods gave us great respect for his ability.

One thing that I much needed and that Clark did not have to offer was instruction in statistical methods. It would have been an untold boon to me if I could have had a year with Thorndike immediately upon leaving Clark; but there were no post-doctorate fellowships in those days.

In thinking over the work of leading psychologists, I have been struck by the similarity between their earlier and their later work. There are exceptions, of course, but in the majority of cases the similarity stands out clearly with respect to field of interest, method of work, psychological views, and literary expression. Each man's career shows certain lines of development, but in directions that could almost have been predicted. The Hall of 1880 was essentially the Hall of 1920; the Kraepelin of 1885, the Kraepelin of 1915; the Binet and Titchener of 1890, the Binet and Titchener when they left us; the Spearman and Thorndike of 1900, the Spearman and Thorndike of today. This is not less true of the psychologists I knew in the making at Clark University. As for myself, everything I have done since 1905 was foreshadowed in my interests at that time -- in the psychology of genius, the measurement of intelligence, the phenomena of individual differences, in general, and the problems of hygiene. The small progress one makes after the age of twenty-five or thirty toward higher levels or new fields of achievement is a hard blow to one's pride; it would be so much pleasanter to think of oneself as capable of unlimited growth in any direction. One is reminded of a remark that Samuel Johnson made when he had reached the age of fifty-seven: "It is a sad reflection, but a true one, that I knew almost as much at eighteen as I do now."

## THE FALLOW PERIOD

In the summer of 1904, following my first year at Clark, I suffered a pulmonary hemorrhage, the third warning I had had of trouble in that quarter. Previously, in 1899 and in 1900, the diagnosis had been uncertain, but this time there was no doubt of a mildly active tuberculosis. It was probably fortunate for me that the doctors of that time knew so little. According to present practice, I should have been put to bed for six months or a year, in which case I should probably have gone to pieces from worry over my broken plans and the mounting burden of debt. As it was, I merely rested for a couple of weeks until my temperature had subsided and then went back to work. During my last year at Clark, however, I led a more careful life, avoiding fatigue and giving special attention to diet and sleep. By the end of the year my condition had greatly improved, but my physician warned me that it would be desirable to seek a [p. 322] more congenial climate, and I therefore limited my search for a position to the South and Southwest. Late in the spring, after some months of anxious waiting, the friendly fates brought me three offers in as many days. The first was the presidency of a struggling normal school in St. Petersburg, Florida, which I accepted. Then, within forty-eight hours, I was offered



a one-year position at the University of Texas as substitute for Professor Caswell Ellis on half salary, and also the principalship of the high school at San Bernardino, California. After two sleepless nights of indecision, health considerations won out over professional ambition and I secured release from the Florida position in order to go to California. It would be useless to speculate what my future would have been if I had gone to Florida or Texas. The Florida position was offered to Conradi, who accepted it and later became President of the Florida State College for Women. The Texas position went to Morse, now Professor of Philosophy at the University of South Carolina.

My year at San Bernardino was a busy and happy one. Shortly after school opened there was another threat to my health, but by the end of the year I was again in fair condition and was looking forward contentedly to a second year in the same position. Then, quite unexpectedly, there came a telegram from C. J. Albert, of the Albert Teachers Agency, saying that his old friend Dr. Millspaugh, President of the Los Angeles State Normal School, wanted a man in my line. I took the next train to Los Angeles, had a conference with Dr. Millspaugh, and in a few days was offered the position as Professor of Child Study and Pedagogy.

I was at Los Angeles for four years. The library facilities were unusually good for a normal school, the work was not too heavy, and the associations were pleasant. Among my colleagues in psychology and education during a part or all of my four years were Dr. Jessie Allen (now Mrs. W. W. Charters), Dr. Arnold Gesell, Beatrice Chandler (now Mrs. Gesell), Everett Shepardson (since deceased), and Dr. Wayne P. Smith -- a group that would have been hard to match in any normal school in the country. All were scientifically minded and intellectually stimulating. Without them, the years I spent in Los Angeles would have been far more arid than they were. The insecurity of my health, which made it seem unwise to undertake any more work than the minimum my teaching demanded, rendered these associations especially important. I read only moderately, tried to forget that I was ever interested in research, and spent as much of my time as possible out of doors.[p. 323]

The contacts which meant most to me both professionally and personally during this period were those with Gesell and Huey. For two years the Gesells lived across the road from me near the foothills, and we were much together. The vacation of 1907 I spent with my family in the San Bernardino mountains, where Huey was our guest for the greater part of the summer. He was becoming more and more interested in clinical psychology and our daily talks concerned chiefly mental examination methods. In 1910 Huey again visited me, this time for two weeks. It was just before the beginning of my first year at Stanford; I was "boning" on the courses I was to give and was naturally in a receptive state of mind. At this time he told me much about the work he had been doing in Adolf Meyer's clinic at Hopkins and about the work of Binet and Goddard. He urged me to start some work at once with the Binet 1908 scale for measuring intelligence.

## STANFORD UNIVERSITY

As the reader has seen, there were many links in the chain of events which brought me to Stanford. Chance played its part in my leaving a public-school position to attend Indiana University, in my going from there to Clark instead of to a high-school principalship, in my move to California, and again in my hearing of the Los Angeles position in time to apply for it. In 1909, Bergström, my former teacher, was called from Indiana to a newly created professorship of educational psychology in the Department of Education at Stanford, but before the end of the first year his life was prematurely ended. The position was then offered to Huey, who refused it in order to continue his clinical researches with Meyer and recommended my appointment instead. Thus, in 1910, I found myself a member of the faculty of Stanford University, the university that I would have chosen before any other in all the world.

Nothing could have been more fortunate for me than the call to Stanford at this particular time. I had regained my health and was becoming restless. Gesell had left for Yale a year earlier, but I was compelled to wait until a call came from the right climatic location; for I was unwilling to risk a position in the East or Middle West. Five years had passed since I left Clark, and I had

reached the age of thirty-three. A few more years of waiting and my chances of a good university position would have begun to dwindle.

Professor Elwood P. Cubberley, who brought me to Stanford and [p. 324] was my "chief" from 1910 to 1922, gave me every opportunity and encouragement. Although my initial rank was only that of assistant professor, my teaching schedule was light. Insofar as the needs of the Department permitted, I was given free range in the selection of courses anywhere in the field of educational psychology and mental development. In collaboration with one of my graduate students, H. G. Childs, I began at once an experimental study of the Binet tests and continued with this problem until the publication of *The Measurement of Intelligence* in 1916. In the meantime, through my courses in school hygiene and by writing *The Hygiene of the School Child*, I was giving vent to another of my deep-seated interests. This had its origin with Lindley and Bergström at Indiana, gained new life from Burnham's lectures at Clark, and was given imperative need for expression by my personal health problem. There is an old saying that if you scratch a health reformer you will find an invalid.

*The Intelligence of School Children* and the Warwick and York monograph on the Stanford Revision data were by-products of the work that led to *The Measurement of Intelligence*. I was a little surprised that my publications in the test field were so favorably received. I knew that my revision of Binet's tests was superior to others then available, but I did not foresee the vogue it was to have and imagined that it would probably be displaced by something much better within a few years.

Apart from the possible fate of my own work, I did not expect mental tests to gain acceptance nearly so quickly as they did. I was quite aware of the fact that many of the old-line psychologists regarded the whole test movement with scorn. I was probably more sensitive on this point than the facts warranted, with the result that I made at this time fewer contacts with psychologists in other fields than I should have done. Between 1910 and 1916 I made no trips East and did not even apply for membership in the American Psychological Association. I had the feeling that I hardly counted as a psychologist unless possibly among a few kindred souls like Gesell, Goddard, Kuhlmann, Thorndike, Whipple, Yerkes, and a few others who had become "tarred by the same brush." With these I kept in as close touch as possible through publications and sporadic correspondence. In 1916, I taught in the summer school at New York University and the following year in that at Columbia. Both experiences were exceedingly stimulating.

Among psychologists whose works I studied most assiduously at [p. 325] this period were Janet, Meumann, Spearman and his followers, Stern, Ebbinghaus, Thorndike, Whipple, and writers of the Freudian school. I read again all of Binet's earlier contributions on mental tests, lectured on the work of Stern and Meumann, published a fifty-page summary and criticism of Meumann's *Experimentelle Pädagogik*, and took note of most of the theses that appeared from Chicago, Clark, and Columbia. I read regularly almost everything in *l'Année*, *The British Journal*, *Zeitschrift für angewandte*, Kraepelin's *Psychologische Arbeiten*, *Zeitschrift für pädagogische Psychologie*, and all the American journals. It was Thorndike whose writings stimulated me most at this time, perhaps because I found myself in almost perpetual disagreement with him. Next in order would probably be Meumann, Stern, and Whipple.

At this time I also made careful notes of all the important monographs on mental development and reread Ellis, Krafft-Ebing, and others on the psychology of sex. I read Titchener's books and articles as they appeared, but was little influenced by them. What we are accustomed to think of as "Titchenerian psychology" has always appeared to me as singularly sterile.

Then came the War, with service on the committee that devised the army mental tests; on Yerkes' staff, first, as Director of Research on the army tests and later as collaborator with Yerkes, Boring, and others on the historical account of psychological work in the army; and as a member of Scott's Committee on Classification of Personnel. It would take us too far afield to enter into the new world of experiences which the war work opened up to me. Their most important aspect, so far as my personal development is concerned, was in the opportunity they

gave me to become acquainted with nearly all of the leading psychologists of America. Among the war associations which meant most to me were those with Yerkes, Thorndike, Whipple, Scott, Woodworth, Kelley, Bingham, Yoakum, Mabel Fernald, Bridges, Boring, Dodge, Goddard, Strong, Wells, and May. Through them and others my information was extended and my interests broadened in many fields of psychology. My intimate contacts with Yerkes in particular, both in our daily work and during the long periods when I lived in his home, meant more to me than could easily be expressed.

One result of the war experiences was to confirm and strengthen my earlier beliefs regarding the importance of mental tests as an integral part of scientific psychology. Whereas I had thought that [p. 326] only a handful of psychologists were of this opinion, I now learned that many were. I no longer felt isolated. I could return to my work with more confidence than ever that, in the long run, contributions in the field of mental tests would receive the recognition they deserved.

For a couple of years after the War a good part of my time was devoted to work on various kinds of tests, including *The National Intelligence Tests*, *The Terman Group Test of Mental Ability*, and *The Stanford Achievement Tests*. Then, through a liberal grant from the Commonwealth Fund, came the long-wished-for opportunity to undertake a major research with gifted children, a held in which I had been working for some time. The result was *Genetic Studies of Genius*, Volume I appearing in 1924, Volume II (by Dr. Catherine Cox) in 1925, and Volume III (by Burks, Jensen, and Terman) in 1930. *Children's Reading* (by Terman and Lima) was largely a by-product of the gifted children study.

In 1922 I was transferred to the Department of Psychology as successor to Professor Frank Angell, who had headed the Department since its beginning in 1892 and was retiring as Professor Emeritus. Thomas Welton Stanford had recently left approximately a half million dollars to the University for psychology, and this fund, which had just become available, offered a rare opportunity to develop in a short time a strong psychology department. The first two positions filled were those in experimental psychology and animal behavior, the former by Miles and the latter by Stone. A year later Strong was added in vocational psychology. Coover and Merrill were already members of the Department, Coover in learning and psychical research and Merrill in clinical psychology. On my recommendation, Kelley had been brought to Stanford in 1920 as Professor of Education, before my transfer to the Department of Psychology, and arrangements were later made whereby he served as a member of both the education and the psychology faculties. Farnsworth was added to the faculty in 1925. My judgment in the case of all these men was well borne out by their later achievements, and Stanford quickly assumed a position of leadership in psychology. Although I dislike doing work of an administrative nature, I think that nothing I have accomplished has given me a stronger or juster sense of pride than my part in helping to build up an outstanding department at Stanford. The task was made easier by the encouragement and unfailing support of President Wilbur and by the [p. 327] high standards of teaching and research which Professor Angell had maintained since the foundation of the Department.

During six years I served as a member of the University Scholarship Committee and, in this capacity, I was instrumental in bringing about the introduction of intelligence tests as a partial basis for the selection of candidates for admission to the University and brought about the establishment of the Independent Study Plan for gifted students.

Both before and since my transfer to the Department of Psychology I have been fortunate in the graduate students who have elected to work with me. Among those for whose doctor's theses I have been mainly or solely responsible are (in approximate order of date): J. Harold Williams, Arthur S. Otis, Samuel C. Kohs, William T. Root, James R. Stockton, Giles M. Ruch, Maud A. Merrill, Kimball Young, Virgil E. Dickson, Curtis E. Merriman, Marvin L. Darsie, Vernon S. Cady, Florence L. Goodenough, Albert S. Raubenheimer, James C. DeVoss, Ellen B. Sullivan, Catharine Morris Cox, Raymond R. Willoughby, Dortha Williams Jensen, Helen Davidson, Barbara Stoddard Burks, and Robert G. Bernreuter.[6] It is perhaps indicative of my own concentration of interests that all but three of these theses belong in the field of individual

differences. The three exceptions are in learning (Ruch, Sullivan, Davidson), and two of the three deal with the relation of learning to intelligence (Ruch, Davidson). Of the others, three have to do with intelligence test construction (Otis, Kohs, Goodenough), one with the nature of intelligence (Stockton), one with the intelligence of delinquent subjects (Williams), three with the construction and validation of character or personality tests (Cady, Raubenheimer, Bernreuter), two with race differences (Young, Darsie), four with gifted children (Root, DeVoss, Cox, Jensen), three with family resemblances in mental abilities (Merriman, Willoughby, Burks), one with school achievement of defectives (Merrill), and one with the classification of school children for instruction (Dickson). Of two post-doctorate Fellows whose researches I have sponsored, one, Dr. Keith Sward, tested the intellectual abilities of young and old professors; the other, Dr. Harold Carter, made a particularly detailed study of the resemblance between identical twins in mental abilities and personality traits.

To these students and to many others who did not go so far as the doctorate, or for whose theses I was not primarily responsible, I am enormously indebted. All, in one way or another, have influenced my interests, and some of them have led me to extensive modification of my views. I think I can truthfully say that I have always tried to encourage the graduate student to do his own thinking, and that, other things equal, I remember with most satisfaction and gratitude those who held out most strongly for their opinions.

My own research activities of the last five years have been confined chiefly to three projects: a follow-up study of a thousand gifted children (Volume III, *Genetic Studies of Genius*), a study of sex differences in non-intellectual mental traits, and a new revision of the Stanford-Binet intelligence tests. On the first I have had as chief collaborator Barbara Stoddard Burks; on the second, Catharine Cox Miles; and on the third, Maud A. Merrill. The last two studies have been under way for three years and are still unfinished. My interests at present are largely in the fields of personality testing, mental inheritance, and the psychology of genius.

The Editor has suggested that it would be interesting if the author of each of these autobiographies would render some sort of appraisal of his own work. He did not say whether he thought it would be enlightening as well as interesting! I recall that Binet pointed out, long ago, the difficulties of auto-criticism and the risk it imposes of giving oneself away; nevertheless, the invitation is accepted. I am fully aware that my researches have not contributed very greatly to the theory of mental measurement. On problems of less theoretical significance, but of importance for the usefulness of tests and for the psychology and pedagogy of individual differences, I think I have made contributions of value. If I am remembered very long after my death, it will probably be in connection with my studies of gifted children, the construction of mental tests, and the psychology of sex differences. I think that I early saw more clearly than others the possibilities of mentality testing, have succeeded in devising tests that work better than their competitors, and, by the application of test methods, have added to the world's knowledge of exceptional children. My contributions were greatly favored by my early interests, the opportunities which my Stanford position provided, and the persistence with which I have applied my efforts in a particular field.[p. 329]

In response to the Editor's request for a statement of my position with reference to current psychological issues and movements, I venture to offer the following credos, which range all the way from tentative beliefs to fairly positive convictions:

That mental testing is in its merest infancy and will develop to a lusty maturity within the next half century; that its developments will include improved tests of general intelligence (in the reality of which I believe), tests of many kinds of special ability, and tests of personality traits which no one has yet even thought of measuring;

That within a few score years school children from the kindergarten to the university will be subjected to several times as many hours of testing as would now be thought reasonable;

That educational and vocational guidance will be based chiefly on test ratings, and that Hull's proposal to measure every important ability and personality trait and to "grind out" a hundred or

more occupational success predictions for every youth is practicable and will be realized;

That public vocational testing bureaus, employing methods of the kind referred to in the preceding paragraph, will be operated for the benefit of adults of all ages and both sexes;

That it will some day be possible to identify, largely by means of tests, the pre-delinquent and the pre-psychotic, and that effective preventive measures will result from this advance;

That matrimonial clinics will become common and that couples in large numbers will submit themselves to extensive batteries of ability, personality, interest, and compatibility tests before deciding to embark together;

That mental testing is destined to exert a profound influence on economic theory, industrial methods, politics, and the administration of law;

That the major differences between children of high and low IQ, and the major differences in the intelligence test scores of certain races, as Negroes and whites, will never be fully accounted for on the environmental hypothesis;

That mental testing will be more and more recognized as an integral part of experimental psychology, and that this recognition will be reflected increasingly in undergraduate instruction;

That psychiatry will not be pulled out of the mire until it lays down the requirement of two or three solid years of training in psychology, including psychobiology, mentality and personality testing, and statistical methods;[p. 330]

That psychology will, in time, give us a new type of biographical literature in which the interpretation of a subject's life will be based largely upon quantitative measurements of abilities, personality traits, and interest-attitudes;

That contrary to what would be suggested by an examination of the courses in teachers colleges and schools of education, psychology offers almost the sole basis for a science of education;

That the revival of associationism and the vogue given it during the last quarter century by the "bond" psychologists has about run its course;

That the Watsonian brand of behaviorism is a cult, and that its presumption in claiming the whole of psychology and in basing a theory of child training and a denial of heredity on a few minor experiments in the emotional conditioning of infants is ridiculous;

That the method of introspection has not been and never will be rendered obsolete by objective psychology, and that much greater use should be made of it in experimental learning and mental test construction than is customary at present;

That Gestalt psychology, even though its formulations are largely a matter of renaming old concepts, is exerting a wholesome influence on experimental work and on psychological theorizing;

That animal psychology is extremely important because of the greater opportunity it affords, in comparison with human psychology, of securing crucial data on certain types of problems in the fields of learning, mental inheritance, and the relation of intelligence and instinct to neural functioning;

That the Freudian concepts, even when their validity has been discounted about 90 per cent, nevertheless, constitute one of the two most important contributions to modern psychology, mental tests being the other.

I will close with a paragraph of "prejudices." On the Goodwin Watson test of Fair-Mindedness I rate as a rather extreme radical in my attitude toward the church and toward most problems of social ethics, but as merely a liberal on political and economic issues. On the whole, I am inclined to be pessimistic about present trends in democracy. I have a violent antipathy to prohibition, censorship, and most other activities of the moral reformers. I look upon Havelock Ellis as one of the most civilizing influences of the last hundred years. My taste in non-professional reading runs to fiction. In fiction I prefer realism, and I like my biographies [p. 331] to give the kind of information that can be used as raw material for character analysis. The Strong Test of Occupational Interest rates me as having interests typical of psychologists and educators (Score A), moderately like those of personnel managers and journalists (Score B), and quite unlike those of artists, chemists, engineers, architects, farmers, and salesmen (Score C). On my test of mental masculinity and femininity I rate at about the average for men. On the Bernreuter Personality Inventory I rate at the ninetieth percentile in introversion and at the thirtieth percentile in dominance (aggressiveness). I dislike psychologists who exhibit over-much zeal in defending their pet systems. Of the founders of modern psychology, my greatest admiration is for Galton. My favorite of all psychologists is Binet; not because of his intelligence test, which was only a by-product of his life work, but because of his originality, insight, and open-mindedness, and because of the rare charm of personality that shines through all his writings.

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## Notes

[1] It appears from Cattell's published data in the 1921 edition of *American Men of Science* (p. 803) that my family was the only one in his group of one thousand cases with "twelve or more" children.

[2] It would be interesting to know whether any other one-room rural school in the country has contributed two men to Cattell's list.

[3] See Kuhlmann, F. On the analysis of the memory consciousness. *Psychol. Rev.*, 1906, 13, 316 ff.

[4] Three years of work in the laboratory at Indiana and Clark Universities did not enable me to overcome my mechanical ineptness. The set-ups were always difficult for me and a piece of "machinery" always seemed to be an obstruction between me and the thing I was trying to get at. "Brass-instrument" psychology was all right for the other fellow, but was not intended for me. My dislike of apparatus doubtless had something to do later in turning me to tests and measurements of the kind that make no demands upon mechanical skill.

[5] When I left Clark I was \$2500 in debt, or about the equivalent of \$5000 to \$6000 at the present time.

[6] In the case of several of these the responsibility was shared by Kelley (Merriman, Cady, Raubenheimer, DeVoss, Willoughby, Jensen), in two cases by Miles (Sullivan and Davidson), and in two cases (Young and Dickson) by professors in the Department of Education.

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