Cattell at Penn

James McKeen Cattell was born in 1860. He attended Lafayette College in Easton, PA. Influenced by the works of the philosophers Comte and Bacon, he placed high value on empirical work and the use of mathematics. On his graduation in 1880, Cattell set off for travel and studies in Europe. He obtained his PhD with Wundt in German and worked with Galton in England.

Wilhelm Wundt (1832-1920) founded the first experimental psychology laboratory at the University of Leipzig in 1879. In this laboratory, emphasis was placed on the study of introspection through the controlled and disciplined observation of one's own mind, often under well-specified stimulus conditions. Cattell was the first of about a score of American students to earn a PhD in experimental psychology.

Note from Wundt to Cattell asking him to serve as an interpreter for the visit of Alexander Bain to the Leipzig laboratory.


Letter written by Cattell to his parents, from Cambridge on November 24, 1886. The Prof. Sidgwick in question is surely Henry Sidgwick, the utilitarian philosopher. Thus Cattell is expressing an interest in the problem of measuring utility (to the extent to which utility is to be identified with pleasure).
"The measurement of Pleasure" which I must read to Prof. Sidgwick's next Monday. It is an interesting and difficult question. What do you think? Can we ever say that one pleasure is twice as great as another?

Negotiations with Penn

William Cattell, James's father and the president of Lafayette College, negotiated the appointment with William Pepper, provost of the University of Pennsylvania. The original position was as a lecturer but was then converted to professor of psycho-physics. The laboratory was established in 1888, following the appointment in 1887.

The following excerpts from letters between James Cattell and his parents describe something of the process of that appointment:

From Elizabeth Cattell, Philadelphia, October 5, 1886

The Trustees of the University met last Tuesday, and unanimously elected you Lecturer in Psycho-Physics. Mr. Fraley the President of the board of trustees said, he was delighted that you were elected to fill this position, that he had had you on his mind for three years, proving that he had remember the talk your Papa had with him.
Liebes Herr Cattell,

Prof. Pen. Bin ich Aberdeen ist
hier und wünscht morgen Nachmittag
das psychologische Laboratorium zu sehen.
Sagt es Ihrer nicht viel Interesse ist
ihre heuere in London mit Sie sind auch, da
so wie Sie wissen das Engländer schlecht
anhören, als Erstgenannt besonders ich
diese Könnte, so müsste es mich freuen.

so long ago.

From Elizabeth Cattell,
Philadelphia, October 8, 1886
wenn Sie daraufhin Curie kommen möchtest.
Ich habe mit ihr vereinbart, dass ich
ihn nachher werde, und wenn wir beide
nach 4 Uhr im Laboratorium antreffen.
Da Sie möglicherweise verteilt sind,
werde ich freilich nicht, aber dieser
Brief in Ihre Hände gelangt, und
werde ich, meine Sie nicht im
Laboratorium antreffen, annehmen, dass
Sie nicht hier sind.

Mit besten Grüßen
vor W. Humett.
The next letter you receive after this, will probably be an important one, from Dr. Pepper, in which he will offer you a Lectureship in the University here. You will lecture only to post Graduates, the salary will be small $250, for the lectures, for the first year, but you will have most of your time for study and you can still go on with your investigations. Your Papa has worked hard for this ...

From William Cattell, Philadelphia, December 1, 1886

I have not been able yet to see Dr. Pepper anent the apparatus; but I spoke to one of the Trustees my neighbor Mr. Potts, who seemed to favor the proposition. Suppose you wrote me a letter about it that I can show the Dr? -- and mention the amount: -- was it $500 or $1000.

William Pepper, the University of Pennsylvania Provost who hired Cattell and thus brought experimental psychology to the University.
In the meantime ...

While this was going on, Cattell met his wife, Josephine Owen, who stood by him, and in fact helped him, through what was to be a difficult career. She essentially took over his work when he was depressed after being fired by Columbia (see below). Cattell has been characterized as "not the sort of person you would want as a colleague." But this letter suggests that he was a human being, despite being a bit obsessed with objectivity and the measurement of human traits.

June 24, 1887

I scarcely know what more to tell you. It is not easy to describe any one, least of all the woman I love [Josephine Owen]. If there were things in which I do not think her perfect, I should not tell you of them, and all the praise I could write, you would take as a matter of course. She looks both younger and smaller than she is - she must be 5ft 3in tall, perhaps a little more, and weighs 115 lbs - which is easy enough to write but does not convey much. She was ill some when she was younger, having had scarlet fever three times, but is now in good health and very strong, at least has an immense deal of energy. We rowed down from Connewitz the other evening without stopping in 25 minutes - which Harry will tell you is very fast. Today we walked 6 or 7 miles before dinner, she had a music lesson in the afternoon and we went to the theater in the evening - it was Rienzi, the beginning of the Wagner cyclus - and she does not seem to be at all tired.

Now what more shall I say? I wish most of all you could see her. Perhaps it will decide you to come over this summer - that would be altogether pleasant. You will be quite delighted with your daughter. I imagine you thought it possible that I might marry an actress, socialist [sic], or such like - but everyone who knows "Jo" is fond of her [...]. All her girl friends and the people she lives with are extremely fond of her. She lives in a nice family - the widow of a professor - Harry knows the son Dr. Bruns. The little girl keeps following her and looking at her all the time. She and her brother are very fond of each other. I imagine half the men I have seen with her have been in love with her.
You see I am trying to give objective rather than subjective opinion - the latter being under the circumstances, if not less true, at all events less likely to be accepted as accurate. By way of further objective fact I might say that before leaving England she passed a "Local Examination" and had studied Latin, Geometry, etc. For the past two years she has been studying music here - and in America, at least, would be considered to be a very accomplished musician. She will give up continuous piano practicing - as we agree in thinking that it costs too much time - but will go on with her singing. I have not heard her sing - except in the choir at church - I imagine she has a good but not remarkable contralto voice. She has read a good deal - she understands and likes Shakespeare, Goethe, Browning, etc. She knows French as well as German. She likes to cook and sew. She designs her own frocks and dresses very prettily. She understands at once whatever I explain to her - she is anxious to help me in my work and quite able to. But it is not for these reasons that I love her - you will partly understand them when you meet her, partly they will perhaps remain my secret.

From William Cattell, Philadelphia, November 11, 1888

You will have the title of Professor in one of the leading Universities of our Country -- a suitable laboratory in the "near future"; and, I hope, a salary of $1000 at the University with leisure to supplement this by a course of lectures at some neighboring institution.

To Parents, November 20, 1888

I have heard from Fullerton again today with a letter enclosed from one of the Trustees to him, containing the very good news that the professorship has been established, and that I should probably be elected in Jan. It is said "The Provost stated that $1000 for three years would be contributed by friends of the university" -- but you of course knew about it before this.
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Oliver J. Davis, A.B. (Wellesley), Philadelphia.
G. Dearing, A.B. (Wagner College), (188)

A page from the catalog of 1887-8. The "Department of Philosophy" was apparently a
In Germany and Pennsylvania, Cattell carried out some of the early studies using reaction time to measure mental capacities. Cattell was primarily concerned with the assessment of individual differences and used reaction time measures to determine the range and variability of human nature. In his autobiography, he wrote: "It seemed as natural to measure the rate at which people read as the rate at which they ran; to place them in order of merit for psychological traits as for eligibility to the college football team on which I played or the baseball team of which I was manager. During the three years that he spent at Pennsylvania, Cattell continued to develop the association method, investigating both constrained and free association reactions, which he believed "lay bare the mental life in a way that is startling and not always gratifying." Also during this period, Cattell and Fullerton prepared their monograph "On the Perception of Small Differences" (1892), in which they attacked the methods of orthodox psychophysics. Their arguments reflected Cattell's strong commitment to statistical methodology.

Cattell's laboratory showing the Hipp Chronoscope and gravity chronometer.
Cattell was an extremely prolific researcher and made contributions to the study of reaction time, association, perception and reading, psychophysics, determination of order of merit, and individual differences.

After he left Pennsylvania, Cattell continued to collect data on individual differences in simple mental tasks, such as reaction time. If fell to Cattell's student at Columbia, Clark Wissler, to figure out what to do with these data. (Wissler, C. [1901], The correlation of mental and physical tests. *Psychological Review Monograph Supplements, 3*, No. 6.) Applying Galton's new statistical method of correlation, Wissler found no relationships among Cattell's measures or between the measures and academic achievement. Dismayed, Cattell stopped collecting data (Sokal, p. 339). Ironically, in 1904, Charles Spearman argued that Cattell's tests failed because of poor measurement, not because the basic idea was flawed. Spearman carried out the same kind of program of testing and found substantial correlations, using them to argue for a general factor in intelligence in his classic 1904 article: "General intelligence," objectively determined and measured. *American Journal of Psychology, 15*, 201-293.

A reaction-time experiment, using a Hipp Chronoscope and a Cattell Gravity Chronometer, much like those that Cattell and his students regularly performed at the University of Pennsylvania. (For details, see M. M. Socal, "An education in psychology," p. 323.) The time taken for the subject to begin reading a word displayed in the chronometer, at left, is being determined. The Hipp chronoscope is started by the dropping of the screen. It is stopped by the subject reading the word aloud, which opens the lip key in the subject's mouth.
Cattell after Penn

In 1890, Cattell left Pennsylvania for Columbia, where he established another psychological laboratory. At Columbia, his interest in research soon gave way to his entrepreneurial instincts and executive temperament. With Baldwin, he founded Psychological Review in 1894. Six years later, he began Popular Science Monthly. He compiled the first edition of American Men of Science and edited six subsequent editions from 1906 to 1938. During this time, he was editor of Science, School and Society and the American Naturalist. In addition, he founded the Psychological Corporation, which marketed psychological services to the industrial and public sectors.

During World War I, he wrote a letter to several Congressmen urging them to "support a measure against sending conscripts to fight in Europe against their will." He had been against the war from the start, although once the war started he joined the Psychology Committee of the National Research Council, which organized and supervised psychological research. But he continued to be concerned about men who later came to be known as conscientious objectors.

He had already done many things at Columbia to irritate his colleagues. He was "combative, blunt, and altogether lacking in tact" (Gruber, 1972), and several efforts had already been made to get him dismissed. The letter was the last straw, and it led to dismissal, by the Trustees, on October 1, 1917. Many year later, after an extensive court battle, he was reinstated. Although most of his colleagues disliked him, many defended his "academic freedom," and his case provided fuel to the newly founded American Association of University Professors. Ultimately, the movement for academic freedom led to the general acceptance of the idea that academic freedom is an important part of being a professor, and, in particular, professors cannot be fired for the expression of political views, however unpopular they may be (Gruber, 1972).

Cattell devoted substantial energy to the ranking of men of all sciences in terms of their eminence. The following excerpt from his autobiography describes his perception of his own status:

"Certainly, I have no illusion that I am a figure in the world that will attract the interest or curiosity of the present or future public. My estimate, based on the attitude of others, is that I stand somewhere
among the first hundred contemporary scientific men of the United States and also probably among the first hundred editors and promotors of science and education. This will put me among the first thousand in a Who’s Who of the current sort, but that is not much. I have drawn up by objective methods a list of the thousand men most eminent in history, arranged in order of merit. The first ten of the last hundred are Gracchus, Delambre, Caligula, Edward II, Richardson, Prophyry, Nicole, Waller, Balboa, Solyman. Who knows or cares much about these men or would take the trouble to be greater than Gracchus?"

**References**


**The Hipp Chronoscope**