

The Psychological Laboratory  
James McKeen Cattell (1898)

Classics in the History of Psychology

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During the past quarter three papers have appeared that are of interest to all students of psychology.[1] They are so accessible that an abstract is scarcely needed, but some comments may be profitable, more especially if they lead to further discussion.

Professor Titchener describes the Cornell laboratory and the general needs and functions of a psychological laboratory with the skillful hand to which we are accustomed. The members of the Psychological Association who attended the Ithaca meeting know that he has an admirable subject. The Cornell laboratory, owing to its large resources and able management, may serve as an example. It is a pity that the trustees of our universities do not read *Mind* in order to learn that \$2,000 should be granted for the establishment and \$600 annually for the support of a laboratory. I do not know the resources of Chicago and California, but probably no other American or foreign laboratory (except Professor Wundt's, as the result of its longer history) has fared quite so well as that at Cornell. University trustees do not read *THE PSYCHOLOGICAL REVIEW* either, so there is no danger in saying that Professor Titchener's estimate of \$300 annually for current expenses seems to be rather extravagant.

As Professor Titchener asks for discussion and criticism I shall take up one or two topics. The large ground plan and the description of the laboratory show that, in addition to a lecture-room and rooms for the director and assistant, there will be, when the laboratory is complete, eight rooms. There are, or will be, a small workshop, two dark rooms, a reaction room, a room for the 'physiological processes underlying affective consciousness,' rooms for haptics, and for taste and smell, and a large room for optics and acoustics. Now, I should find the laboratory more useful if the large rooms devoted to vision and hearing were each divided into two or three small rooms, and all the rooms named after the senses were called x. For research a large room cannot be used simultaneously for more than one purpose, and nothing seems to be gained by setting up all the work on vision, for example, in one room. In some years there may be several researches in progress [p. 656] on vision and none on hearing, and conversely. For instruction it is not desirable to drive a flock of twenty students successively into different rooms. They should use the available space of the laboratory, apparatus set up permanently, as an optical bench or chronograph, where it stands, movable pieces, as a perimeter or tuning-forks, where there are convenient places. A room for taste and smell can scarcely be used continuously for research, and a special room is not needed for an hour's instruction in the course of a year. Doubtless Professor Titchener does not hesitate to violate the names of his rooms and use them to the best advantage. I only make these remarks for those who may plan a laboratory on the Cornell model.

Professor French, in claiming that experimental psychology has no place in the undergraduate course, appears to me to fall into the common error of regarding experimental psychology as a science apart from psychology. It is, I hold, simply a method in psychology, and I do not see how an adequate course in general psychology can be given by any one who ignores this method. Recent text-books -- James, Ladd, Kilpe, Jodl, Titchener, Ebbinghaus and others -- certainly show that the

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results of the experimental method are an integral part of the science of psychology.[2] If students will follow only one course in psychology they would naturally be given a general course. If the teacher has independent interests these would be emphasized, but I should regard the subjects of James's Principles as a safe guide. This course should be given for Sophomores and Juniors, and subsequently a University should be able to offer courses in physiological, experimental, genetic, analytical, philosophical and historical psychology.[3] The special student of psychology should follow all these courses, partly before and partly after taking his B.A.; other students should elect in accordance with their interests and intentions.

I am glad that Professor Titchener advocates laboratory work as an elective course for undergraduates. Still I am not quite so enthusiastic about this as I used to be. An eminent professor of physics [p. 657] recently told me that he did not want to turn his students into the laboratory until they had followed a four-hour course of lectures through the year. In psychology, where the experiments are in a way less fundamental and have scarcely as yet been perfected by the survival of the fit, this point of view is even more tenable. Perhaps an independent lecture course should be offered, and a course of supplementary laboratory work which could be elected simultaneously or the following year.

In a course of lectures on experimental psychology, demonstrations can with much economy to the teacher and student precede, and in some cases replace, laboratory work. Dr. Scripture's lantern seems to perform a useful service; the mere darkening of the room has a pedagogic function in concentrating attention. With the lantern it is possible not only to show pictures, but also to demonstrate many of the phenomena of vision, to exhibit words, etc., for association and memory, and to carry out actual experiments on fatigue, reaction-time, etc. The psyche-physical methods can be applied to sight, hearing and the perception of space nearly as well by a whole class as by the individual student. Dr. Ward, in his course on 'Psychophysics' at Cambridge, used to devote hours to explaining the psychophysical methods, and could, I think, have saved half the time by a demonstration. It follows from the above that I think Professor Titchener mistaken in not providing for class experiments.

Some demonstrations seem to me also desirable in a general psychological course. The student has his text-book and the lecturer may not be able to add very much, but illustrations may be given, which will greatly increase the interest of the course and be a real economy for the student. If subjects such as the senses, the accuracy of discrimination, the perception of space, illusions of sense, the elements of music, memory, the association of ideas, etc., are treated -- and they must be treated -- a demonstration or a class experiment will add as much as in physical or chemical lectures. During the years I spent at Leipzig Professor Wundt added many demonstrations to his general course, and I think to its advantage.

Dr. Scripture, from his abundant experience, is able to make many useful suggestions regarding the conduct of a psychological laboratory. Possibly he over-emphasizes the laboratory as compared with psychology. The student who intends to undertake research should understand methods of measurement and the adjustment of observations, but perhaps he should be referred to the physical laboratory. Certainly [p. 658] it is not a necessary function of a psychological laboratory to teach the use of the lathe. If the student can work in metals he has an advantage, though he is also in danger of wasting time. The calculus may ultimately become important in psychology, but as yet no one has accomplished much by its application. Dr. Scripture's ideas of profit and loss are rather material. Whether the use of an instrument costs eight cents or three cents per hour is not as important as he seems to think. When he writes : "The best laboratory \* \* \* is the one that yields the largest net results in scientific research and instruction for each dollar expended," I should only agree on condition that the last four words be omitted. The question of an expensive outfit has two sides. On the one hand, the best research can be done, and has usually been done, with simple means. On the other hand, it is bad economy for a university to spend thousands of dollars on buildings and salaries and reduce the efficiency of the laboratory to one-half by not providing a workshop and adequate instruments.

#### Footnotes

[1] A Psychological Laboratory, E. B. Titchener, Mind, N. S., No. 27, July, 1898, pp. 311-331.

The Place of Experimental Psychology in the Undergraduate Course, F. C. French, THE

PSYCHOLOGICAL REVIEW, Vol. V., No. 5, September, 1898, pp. 510-512.

Principles of Laboratory Economy, E. W. Scripture, Studies from the Yale Psychological Laboratory, Vol. V., 1897, pp. 91-104.

[2] When Dr. Harris writes, in his Psychologic Foundations of Education, that from the 'psycho-physiological laboratories' no 'results in pure psychology of a positive character will be arrived at,' the chief information conveyed is that Dr. Harris is concerned with a psychology that belongs to the past.

[3] Whether a special course in experimental psychology should be offered by a college as an elective seems to depend on the resources of the college. Vassar, with four or five hundred students, many of whom intend to become teachers, should, I think, provide such a course.

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