

business and business administration at the Sheffield Scientific School of Yale University, are announced. The donors are Frederick W. Vanderbilt, of the class of 1876, S., and a graduate of the class of 1887, S., whose name is not made public. The new course will be for one year, and, if possible, two years. It is expected that it will be open to students at the beginning of the next academic year.

A GIFT of \$10,000 to Smith College has been made by Mr. and Mrs. A. J. White, of Brooklyn. Half of the money is to be applied toward payment for recent improvements on the Lyman Plant House. The remainder will constitute a permanent endowment fund for repairs to the house, purchase of new materials, and encouragement of botanical study.

A BEQUEST of \$10,000 to St. Lawrence University at Canton, N. Y., is made under the will of Mrs. Kate A. L. Chapin, of Meriden, Conn.

At its last session, the council of the Université de Paris unanimously resolved that Belgian students who before the war had been matriculated in one of the universities of their own country might become matriculated in the schools of the Université de Paris without having to pay the matriculation, inscription and library fees. Young Belgians from the Belgian establishments of secondary education will likewise be received if they fulfill the conditions exacted by the Belgian universities. In default of diplomas and certificates, the young people may prove their qualifications by such means as are possible, for instance, certificates of French or Belgian diplomatic or consular agents.

PROFESSOR and Mrs. Frederic S. Lee have given to Columbia University the sum of \$20,000 to establish a fund for the use of the department of physiology. It is intended that for the present the income shall be used for the maintenance of the library of the department. The university is about to acquire the valuable collection of books belonging to the late Professor John G. Curtis and consisting of ancient and medieval works on the history of physiology.

DR. ROBERT BENNETT BEAN, of the department of anatomy in Tulane University, has been advanced from the rank of associate professor of anatomy to that of professor of gross anatomy in the department of anatomy, and Dr. Sidney S. Schochet and Mr. Charles W. Barrier have been appointed instructors in anatomy.

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## DISCUSSION AND CORRESPONDENCE

### TEACHING AND RESEARCH

THE suggestive article by Professor Cattell in *SCIENCE* of October 30, p. 628, leads me to offer a few observations growing out of my own experience. One who is wholly a teacher tends to organize his work on a more or less permanent basis, with definite limitations. If he possesses good natural ability, he becomes very efficient, teaching clearly and logically what appear to him to be the more important things. He tends more and more to fixed opinions, and to arbitrary divisions between the things which should be known and those which need not be known. Such a man will be tremendously indignant because *X* does not know *a*, but feel no shame on account of his own ignorance of the analogous facts *b*, *c*, etc.

One who is primarily interested in research finds his mind much occupied with various trains of thought, and his interest tends to center about *uncertainties* rather than *certainities*. Even as he teaches, things assume new aspects to his mind. Much has been made of the saying that Kelvin made discoveries while lecturing, but (in a small way) this is probably a common experience.

The teacher who does no research tends to become increasingly confident of his own knowledge, and conveys this feeling to his class. One who is primarily an investigator, unless he works in a very small field which he has thoroughly in hand, is continually reminded of his own limitations and of the vastness of the unknown. He is humbled by the mistakes he can not help making, and feels and appears more ignorant.

I have tried to define extreme cases; most of us are blends or mosaics of the two types. It must be admitted, I think, that when a teacher is keenly interested in research, his teaching suffers in some respects. It gains in others, and the question is, how to find the optimum condition of affairs. We seem to be attacking the old problem of progress. We are reproducing on a minute scale the phenomena of evolution. The absence of progress and excessive progress are alike detrimental, and there is a shifting optimum between. My personal opinion, which tends to grow stronger with time, is that our universities mostly err on the side of conservatism and dogmatism, so that additional emphasis on progressive policies becomes desirable. By a sort of paradox, conservative teachers with rigid ideas are frequently undecided or indifferent as to the merits of the systems they expound, rather priding themselves on their academic impartiality. On the other hand, progressive thinkers will be filled with particular ideas at particular times, and will then appear very confident; thus, superficially, our definitions may seem reversed. In reality, the indecision of the conservative is due to the limitations of his field, and is quite different, psychologically, from the indecision of a man who is ardently seeking a solution which still evades him.

There is, of course, another matter to be considered. Granting that a research man, with his necessary limitations, makes a better teacher than one who is only a teacher, what if he loses interest in his teaching? Many will remember instances of this sort, and it is customary to put the whole blame on the man who has thus failed. Is it not possible that the loss of interest is sometimes accelerated by the indifference of those who do not wish to receive the only sort of thing the man can give? There is so much to do in this world that among the numerous possible activities presenting themselves there is a sort of survival of the fittest. No one is justified in "wasting his sweetness on the desert air," if he can help it. The problem then becomes one of creating an atmosphere in which good

teaching can flourish, as well as securing good teachers.

On the whole, it appears that we can not have every good thing at once. It is for each department and man to seek an optimum which will certainly differ according to times and circumstances. It may, however, be worth while to try to understand the psychology of each situation as it arises.

T. D. A. COCKERELL

UNIVERSITY OF COLORADO,

November 16, 1914

#### A NOTE ON APPARATUS REPAIR

TO THE EDITOR OF SCIENCE: Doubtless there are many who like the writer have met with accidents where a fused-in-platinum electrode has broken off at the very surface of the glass. Such a thing occurred while setting up Hoffman's apparatus for electrolysis.

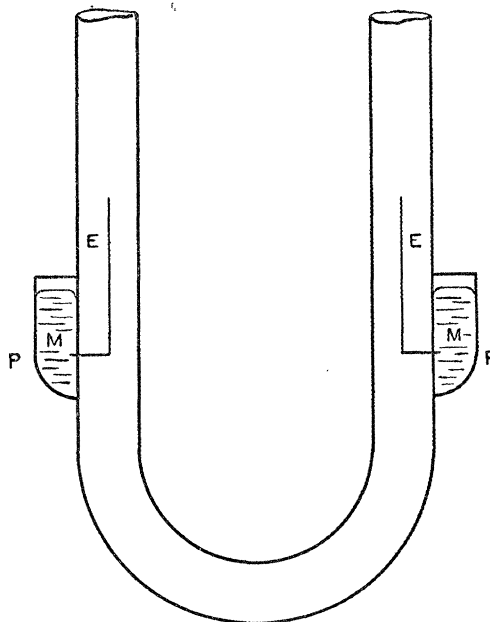


FIG. 1.

In order to repair it the writer took a piece of chamois skin cut to an appropriate size and shape, formed it into a little sack and fixed it with sealing wax to the outer wall of the vertical tube. This sack was so placed that when