in favor of establishing a four year course in medicine at the university. The board will prepare a bill for presentation at the next session of the legislature in 1923 to authorize and appropriate money for the establishment of a state hospital at Columbia to be operated in conjunction with the medical school.

DR. H. J. WEBBER has been appointed professor of citriculture in the University of California and director of the Citrus Experiment Station at Riverside, the position he held before he accepted an industrial position at Hartsville, South Carolina.

PROFESSOR A. V. MILLER, associate professor of drawing and descriptive geometry, has been apppointed assistant dean of the college of engineering of the University of Wisconsin, to take the place of Professor J. D. Phillips, who is now acting business manager during the year's leave of absence of H. J. Thorkelson.

DR. JOHN SUNDWALL, professor of hygiene and public health at the University of Minnesota, has been made director of hygiene and public health in the newly established department of physical education.

IN the Medical School, Boston, Dr. Fred Wilbur Thyng has been promoted to be professor of anatomy, and Dr. Jesse Leroy Conel has been appointed assistant professor.

PROFESSOR H. C. PLUMMER has been appointed professor of mathematics at the Ordnance College, Woolwich, England.

## DISCUSSION AND CORRESPONDENCE

### AN IMPORTANT BUT UNNAMED RADIOACTIVE QUANTITY

THE problems that are met in the quantitative study of radioactive materials and processes fall naturally into two classes. One class includes the strictly chemical problems; the other, the problems that are primarily concerned with radioactive phenomena, such as the rate of emission of energy and the rate of production of alpha particles. In problems belonging to the first class we are concerned with the total amount of material present; but in problems of the second class we are directly concerned with only the relatively small fraction ($\lambda N$) of the atoms present that take part in the phenomenon studied; we are only incidentally interested in the atoms that have remained untransformed.

In such problems, comparable amounts of different radio-elements are such as correspond to the same value of $\lambda N$. There should be a name by which to denote the amount of any radio-element, irrespective of family, that is thus comparable to a gram of radium. If, tentatively, we use the letter $r$ to denote this quantity, then an $r$ of any material may be defined as that amount of the material that will produce transformed atoms at the same rate as transformed atoms are produced by one gram of radium. This quantity plays in radioactivity a part that is analogous to that played by the gram-molecule in physical chemistry, and the adoption of some name for it will facilitate the recording, discussion, and presentation of observations and phenomena.

Thus arises the question whether the term "curie," which denotes an $r$ of radium emanation, shall be redefined so as to cover the entire field embraced by our definition of the quantity $r$, or whether a new name shall be added to the nomenclature of the science. This question was submitted by the Bureau of Standards to a number of chemists and physicists; the majority of those who replied favored a redefinition of the "curie."

The advantages to be secured by adopting a name for the quantity here denoted by $r$ are considered in greater detail in an article that will appear in an early issue of the *Journal* of the Washington Academy of Sciences.

N. ERNEST DORSEY

BUREAN OF STANDARDS,
WASHINGTON, D. C.,
July 30, 1921

### THE VALUE OF TILTH IN AGRICULTURE

TO THE EDITOR OF SCIENCE: If the surface of the earth be broken up to a moderate depth, the growth of plants will be marvelously increased, as has been known from time immemorial.

A scientific explanation of this fact is sug-