been made: John Zahorsky, M.D. (Missouri Medical College), professor of children's diseases; Paul M. Carrington, M.D. (College of Physicians and Surgeons, Baltimore), of the Marine Hospital Service, professor of hygiene; Joseph Grindon, M.D. (St. Louis Medical College), professor of dermatology; George Ives, M.D. (Johns Hopkins University), assistant professor of bacteriology; A. M. Brown (Washington University), instructor in biology.

The School of Botany of the University of Texas announces the following changes and promotions: Dr. F. D. Heald, professor of botany, resigned to become pathologist to the Chestnut Tree Blight Commission of Pennsylvania; Dr. I. M. Lewis, promoted from instructor to adjunct professor; Dr. Frederick McAllister, instructor in botany, Cornell University, appointed instructor; Mr. Charles H. Winkler appointed by the board of regents to act as chairman of the school faculty for the term of two years.

## *DISCUSSION AND CORRESPONDENCE*

### AN ELECTROMOTIVE FORCE DUE TO MECHANICAL ACCELERATION

To the Editor of Science: From well-known mechanical principles it follows that when a solid body is given an accelerated motion each particle of the body is acted upon by a force having a direction opposite to that of the acceleration. In magnitude this force is equal to the product of the acceleration and the mass of the particle.

Applying this to the modern conception of "free electrons" in metals, it is clear that when a piece of metal is given an accelerated motion each electron within it should experience a force tending to move it and this force will be equivalent to an electromotive force. The magnitude of the latter is easily calculated.

The equivalent electromotive force in volts per cm. is

$$V = \frac{300a}{\left(\frac{e}{m}\right)},$$

where $V$ = volts per cm.

$e$ = charge of an electron in electrostatic units.

$m$ = mass of electron.

$a$ = the acceleration given to the metal.

That this equivalent electromotive force is not too small to be detected with appropriate apparatus can readily be shown. If a coil of wire is caused to oscillate rapidly about its own axis, for instance, the electromotive force of each turn is added to that of the next and thus the effect can be enormously magnified over what it would be in the case of one turn. An alternating electromotive force should be generated which when commutated would be within the range of a good galvanometer.

Whether the result of such an experiment were positive or negative it would be of great interest for modern theory, for in case it were positive it would give *directly* the *value* of $e/m$ for the electrons within a metal, and if it were negative it would clearly indicate the falsity of some part of the modern theory.

The apparatus for such an experiment has been for some time in process of construction and I hope before long to report on the results.

D. E. Comstock
Massachusetts Institute of Technology,
September 25, 1912

### REVERSION OF AMBLYSTOMA

To the Editor of Science: The following note on the reversion of adult *Amblystoma,* to the larval axolotl stage, may be of interest to students of amphibia.

A number of years ago, when the writer was a boy residing at Colorado Springs, he confined some "water-dogs" (*Amblystoma*), for a period of four or six weeks, in an artificial pool of water of small diameter. The pool was so fenced that the animals were unable to escape, though they repeatedly endeavored to do so. This enforced residence in the water seemed to effect in them a distinct transformation; the color became duller, the tail broader, the head assumed a more triangular form, and back of the head on each side of the neck, there appeared small, bluish knobs. These