

cepts." It fits exactly the poundals, slugs, geepounds, engineers' unit of mass, gravitals, micro-speedals, kinetic unit, scientific unit, absolute and gravitational systems, "concepts of mass," "force is the space-rate at which work in foot pounds is done, it is also the time rate at which momentum is produced or destroyed" (Perry's "Calculus") and all such pedagogical rubbish.

Our first object is to get the student into a position where he can solve such simple problems as he sees in actual work about him, and a certain amount of ignorance which would be very lamentable on the part of myself and your other contributors, is highly praiseworthy in the student.

Good! Now will Professor Wilson examine the simple problem I have given and my method of solving it and get one of his instructors to experiment on the method with some freshmen students and report the result? "Try it on the dog." Test it not only by the canons of logic and of common sense, but also by experience.

Any student knows what a weight of four pounds is.

Of course he does, until he begins the study of physics; then he may be in some doubt about it. He knows that it is a piece of metal with "4 lb." stamped on it, but when he is told that that is not a weight, but mass, and that a weight of four pounds means a force of four pounds, also that a mass is "the constant ratio of force to acceleration," and that "he can not acquire the desired ideas of mass and inertia until after the ideas of force and acceleration have been accepted," it is no wonder that he becomes confused, and replies to the simple question, "What is force?" "The time-rate of the change of momentum," quoting from the text-book, without knowing what the words mean.

WM. KENT

A MNEMONIC COUPLET FOR GEOLOGIC PERIODS

SEVERAL years of experience in teaching geology led me, some time since, to the invention or discovery of the following scheme for helping students to remember the order of geologic periods.

The form offered here is adapted to the plan presented in Chamberlin and Salisbury's "College Geology," which is widely used. It may be modified without serious difficulty to suit other time divisions.

Neglecting the Pre-Cambrian, somewhat as common histories do pre-historic time, and also the recent epoch, we take the periods of the Paleozoic era, Cambrian, Ordovician, Silurian, Devonian, Mississippian, Pennsylvanian and Permian; of the Mesozoic, Triassic, Jurassic, Comanche and Cretaceous; and of the Cenozoic, Eocene (Oligocene), Miocene, Pliocene and Pleistocene.

Taking the first syllable of each period, and adding the termination *ice* to the Permian to commemorate the glacial epoch of that time, and also to rhyme with "Pleis," which also reminds one of the better known epoch of the same sort, we have the following jingle:

Cam.Or.Sil.De.
Miss.Penn.Perm-ice,
Tri.Ju.Co.Cre.
E.(Ol.).Mi.Pli.Pleis.

Some of the divisions here counted periods may be more fittingly called epochs, but that makes no difference with the order.

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VARIATION IN *GENOTHERA HEWETTI*

DR. G. H. SHULL¹ recently published a paper on "A Peculiar Negative Correlation in *Enothera* Hybrids," in which he showed that in certain cultures dull dark red stems were associated with entirely green buds, and gave other evidence indicating that the appearance of anthocyan in one part of the plant by no means involved its appearance in other parts.

I have this year a series of plants of *Enothera hewetti*, descended from the original plant brought from the Rito de los Frijoles, New Mexico, in 1912. This is a relative of *E. hookeri*, and quite distinct from the species used by Dr. Shull. Nevertheless, it varies in pigmentation along practically the same lines.

¹ *Journal of Genetics*, IV., 1914, p. 83.

Thirteen plants examined fall into three groups, as follows:

- (a) Stems and midribs of leaves dark crimson; buds entirely green. Three.
- (b) Light green stems, slightly speckled or washed with reddish; midribs light green; calyces broadly striped with red, as de Vries² figures for *Æ. hookeri*. Six.
- (c) Red stems and mid-ribs, and red-striped buds. Four.

Thus there is rather absence of correlation than negative correlation, except that no green-stemmed plants with green buds were found.

Mr. H. H. Bartlett, who grew *Æ. hewetti* from my seed in 1914, found the plants diverse, and mostly self-sterile, which led him to suggest (in litt.) that the form might be of hybrid origin. My plants seem quite uniform except in color, as described above, and in the size of the flowers, which seems to vary largely according to the condition of the plant, or on the same plant according to position.³ No other *Ænothera* was observed in the original locality of *hewetti*, and the only species growing in the vicinity at Boulder (until last summer, when I had a single small plant of *Æ. rubricalyx*) is *Æ. cockerelli* Bartl., one of the small-flowered group. It seems probable that *Æ. hewetti* is a pure species, which varies or mutates in the same manner as other members of the genus.

I have this year a very fine plant of *Æ. rubricalyx*, which is even redder than Gates's original figure,⁴ having the buds, including the hypanthium, entirely dark red, excepting the green sepal tips. The stems are dark red, more or less streaked with green, but the midribs are green, only faintly speckled with red. Thus this intensely pigmented plant has the midribs much less pigmented than in the red-stemmed form of *hewetti*, although the buds are very much more intensely pigmented than in the latter.

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July 18, 1915

² "Gruppenweise Artbildung," pl. VIII.

³ This refers to the grown plants. Some diversity in the rosette leaves was noted.

⁴ *Zeits. f. indukt. Abstammungs-u. Vererbungslehre*, Bd. 4, pl. 6, f. 8.

QUOTATIONS

THE CONVOCATION-WEEK MEETINGS OF SCIENTIFIC SOCIETIES

THE scientific men of the country will hold their annual meetings this year at widely separated places and with some conflict. The American Association for the Advancement of Science is responsible for the arrangement of the convocation-week meetings, having fourteen years ago transferred its own meeting from mid-summer to the Christmas holidays. At the same time it obtained from many universities and colleges an extension of the Christmas holidays or grants for leave of absence, so that the week in which New Year's day falls should be free for these meetings. The American Association arranges also for the meetings of affiliated scientific societies which may wish to meet in conjunction with it. It is not expected that all these societies will meet every year with the association, for there are obvious advantages in the isolation of a single society or a small group concerned with related subjects, as well as in a large congress covering all the sciences and numbering its attendance by the thousands.

In order to meet the complicated conditions as well as may be, the American Association has planned a program, according to which once in four years there shall be a great convocation-week meeting representing all the natural and exact sciences, and perhaps, ultimately, also engineering, education, economics, history, philology, literature and art. Such a demonstration of the intellectual forces of the country should be a stimulus to those who join in it and an exhibition that would impress the whole country. It is proposed to hold these meetings once in four years and in succession in New York, Chicago and Washington. The first will take place in New York at the end of the year 1916, and thereafter they will be held in the four-year periods at which the national presidential elections occur. In the intervening two-year periods the meetings will also be in large scientific centers, and it is expected that most of the national scientific societies will take part. The first of these meetings was held in Philadelphia, and the next will probably be held in Boston at the