on the northwest side which face north and northwest. As these pseudo-cirques work headward the divide becomes staggered with cols, horns, and ridges analogous to the "grooved and fretted" divide in a range where mountain glaciation has occurred.

6. The mud flows are the largest on the slopes where the largest drifts occur. These in turn are in the largest valleys.

Nivation itself loosens up the loess, results in mud flows, develops concave depressions independent of drainage lines, and leaves no indication of scour or transportation.

The transfer of material from the upper edge of the snow drift, under the mass of the snow drift, by sheet erosion is very slow and would be imperceptible except for the mud flow which develops at the toe of the drift.

Annually after the drift has entirely disappeared the shady sides of the amphitheaters retain soil moisture much longer than the other sides and slump and soil slip result. The scar resulting from the slip exposes a still steeper surface in the loess to run-off and rill erosion.

During the early spring the walls of the amphitheaters are scarred by soil slips. These extend down the slope from the point of inflection to the bottom, forming black V-shaped gashes on the surface. The slips occasionally move the surface layer to a depth of one foot, but a few inches is the common depth. Gentle spring rains form rills, which in turn follow the soil slips and thus intensify and localize the erosion.

In conclusion it can be said that the predominant process of dissection of the loess-covered plateau is by the formation and enlargement of amphitheaters. All of the valleys and depressions regardless of age present the characteristic curves of maturity with the upper part convex and the lower part concave.

A full discussion of this type of erosion and topography is in preparation. It will be accompanied by large-scale topographic maps, cross-sections, aërial and landscape photographs and statistical data, all of which amply justify the above conclusion.

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A FOSSIL CYCAD IN NEW JERSEY

THE clay deposits belonging to the Raritan formation of the Cretaceous near Woodbridge, New Jersey, which in the eighties of last century yielded so many fossil leaf impressions to Newberry, have recently furnished an unusual specimen. A member of the party of Rutgers University geologists who were removing a group of footprints of a dinosaur picked up the piece of lignite which forms the subject of this note, and submitted it to me for examination. The specimen represents the apical region of a trunk with a large number of scales standing out from this, the whole having a diameter of about 180 mm, while the diameter of the trunk proper is 85 mm. The tips of the scales have been worn away, so that the original diameter of the fossil was probably as much as 200 mm. Some detached scales measure about 50 mm long by 18 mm wide, and are 4 mm thick at the middle, which region forms a broad thickened ridge on each surface of the scale. These organs were apparently narrower and thicker in their distal region, contracting to a diamond-shaped area on the free end.

In spite of the weathered condition of the specimen it has been found possible to make out several imbedded fructifications which superficially resemble those of the cycadeoids described by Wieland and others. Although the axis of the specimen shows a poor state of preservation, certain of the scale-like organs look so favorable that they have been converted into serial sections by the celloidin method. A study of these has shown that they have precisely the same arrangement of their vascular strands as is figured by Carruthers for the leaf-bases of the English cycadeoids. Moreover, our specimen shows a well-developed covering of epidermal scales or ramenta of the same type as those figured by Carruthers and by Wieland. The minute structure of the vascular bundles of our specimen has been compared with Wieland's photographs and found to correspond. The evidence for the view that the scale-like lateral organs are leaf-bases appears convincing. A striking feature of the New Jersey specimen is the excessive development of periderm, which not only surrounds each leaf-base but penetrates it in various directions, resulting in an extensive fragmentation of the organ. An odd feature of certain leaf-bases is the presence of a fossilized fungus which appears to have been parasitic. The evidence at hand points with certainty to the conclusion that we have here a species of *Cycadeoidea*. The nearest locality from which the genus has been reported is Maryland. The discovery of a specimen in New Jersey raises some questions with respect to the sort of climate which prevailed in this region during the Cretaceous period. Taking into account the xerophytic characters exhibited by the conifers occurring in the Cretaceous beds of Staten Island, and described by Hollick and Jeffrey, we may venture the opinion that New Jersey was both warmer and drier during the Cretaceous

than it is at present, in fact the region may have presented more or less the aspect of a desert.

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PLURAL FRACTIONS

FROM time to time correspondents unburden their minds in these columns of sundry loads of worry about the low state of our written and spoken language. Constant Reader has learned to look for old friends among the words mentioned as horrible and convincing examples, and he would be surprised to find that the English courses in high school and college are not blamed for the deplorable condition. My own personal theory is distinctly different, but will not be aired now. The reason for writing is to call attention to a common mistake for which the decimal system must be blamed.

In reading common fractions such as $\frac{4}{100}$ or $\frac{893}{10000}$ gram, one naturally says "four one-hundredths (of a) gram," and similarly for the ten-thousandths. Yet in recent journals these fractions were given as "0.04 grams" and "0.0893 grams." It is not necessary to give references because the mistake is of wide occurrence, and is an argument for the practice of some journals never to use the names of units in the plural. It is easy to see why so many writers use and editors permit the wrong use of the plural. Think of the way decimals are commonly read. "Oh, point, oh, four gram—no, the last figure is four, so it must be grams."

The "oh," it may be remarked in passing, seems to indicate a great public necessity as the cause of the approaching obsolescence of "zero" in reading decimals. As for "naught" it seems to have died when we were young. Do school children still start the two table with "twice naught's naught"?

If the decimals we have given are bad, what can be said of 0.1 or 0.01 grams? Such expressions can be seen if the reader will look for them.

In tabulated data the column headings are often in the plural, though space is at a premium and all the figures in the column are less than unity. In a recent article "Potential, Volts" occurs seventeen times, though the maximum voltage is -0.825. In spite of the minus sign it would not be fair to say that the value is less than nothing, and is that much farther from being plural.

In the same number of the last journal negative powers of 10 play their frequent plural role. For instance, just because it is written 7×10^{-12}, the value 0.000 000 000 007 is ergs! One would like to say that this is a misprint, but the evidence does not in general encourage the charitable thought. On another page can be found "varied from 5–0. 3×10^{-4} g. calories." Seconds, grams and other units in varying negative powers of 10 are common occurrences.

Finally, in the ergs journal a writer says that so and so "occurs at every 2×10^{3} collision." He would not think of writing or saying "at every two collision," but perhaps "at every second collision." Why was he led astray by an exponent?

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WHY PATHOGENE RATHER THAN PATHOGEN?

IN printing this word, quite a good many authors in the states, including the U. S. Department of Agriculture and some universities, use the final "e"; many others do not and many abroad do not. As I recollect, the innovation started with the editorial board of *Phytopathology*. Doubtless the U. S. Department of Agriculture followed the usage of that journal, as did a few universities. I have had my doubts as to the need or even desirability of such usage and have always written the word "pathogen."

I was supported in my view by the opinions I received from several distinguished men of letters, among them Stuart P. Sherman, who said: "Why certainly not, no more use for the 'e' than in oxygen and hydrogen." I wonder if those insistent upon the final "e" use it in naming these two gases. I think the matter is also very well stated by my colleague Professor E. E. Schneider, of the faculty here, who says:

> To me pathogene seems simply absurd. Of course, English is so outrageously inconsistent in spelling that almost no rules can be laid down, but in a case like this, where we have such long-established analogous words as oxygen and hydrogen, I can't see any sense in using a different form. Anyhow, all these forms are from a root *gen* (as in Greek, γενναω; Latin, gens, genus, generare) and *not* from some established nominal or adjectival form having a proper termination of its own, so why not let it go at that? It is true that *gene* has common use, but that is also an arbitrary modern formation, and so does not, to my understanding, constitute a valid precedent for other formations.
>
> My usual rule in the choice between two spellings is this: To choose the simpler one always when there is any authority for it at all, provided the simpler spelling is easily understood, does not conflict with any fairly well-established rule or practice and, finally, does not lead to any possible ambiguity.

Now a little matter of history. At about the time "pathogene" was being insisted upon there appeared