

I am not aware of the distribution of *Astræa* and other corals south to Paranagua. It is quite possible that the *Astræa*, like the mollusks above mentioned, was a denizen of warmer water, demonstrating that the temperature of the Atlantic Ocean in this region has diminished since the Tertiary epoch.

Santiago Roth says that marine (Tertiary?) shells also occur at Buenos Ayres at a considerable depth, and at other localities in the Pampean beds. The question is a difficult one, and only in the future may it be possible to fully appreciate such facts as are here put on record. The Argentine geologists have hitherto paid little attention to the study of the fossil mollusks, and for this reason this first contribution of Ameghino is encouraging and important.

H. VON IHERING.

MUSEO PAULISTA, SAN PAULO, BRAZIL.

USE OF THE INITIAL CAPITAL IN SPECIFIC NAMES OF PLANTS.

THE idea seems to prevail among some naturalists, as may be seen from a recent review in this journal (p. 162), that the retention of the initial capital in certain specific names of plants is a barbarous relic that the botanists themselves cannot honestly defend. As a matter of fact, this is very far from the truth, for it is almost universally adopted in botany, and for good and logical reasons. In the latest authoritative enumeration of American plants, namely, the *List of Pteridophyta and Spermatophyta*, there are four classes of specific names that are written with an initial capital: (1) Species named in honor of persons; (2) species named from places; (3) names of old genera, tribes or sections used as specific names; (4) substantives used as specific names.

The first case is based largely on sentiment. It, to the botanist, does not look well or dignified to write a person's name with a lower case initial. The name was given as an honor or monument to the per-

son, and should be maintained as such. Not *Sedum torreyi*, *Plantago purshii*, but *S. Torreyi* and *P. Purshii*.

The second case is, perhaps, least defensible of all, yet it seems most natural and logical to give the name of a place as nearly as it is usually written, at least in English speaking countries. Thus, *Sambucus Canadensis* and *Campanula Americana*, rather than *S. canadensis* or *C. americana*.

The third case, namely the capitalization of specific names derived from old genera, tribes or sections, is in the highest degree valuable and conducive to accuracy. As names derived from these sources do not necessarily agree in case and number with the generic word, the initial capital calls attention to this, saves much trouble, and reduces the probability of error. *Campanula Medium*, for example, would half the time be changed into *Campanula Media*, but for the initial. So also with *Convolvulus Sepium*, *Achillea Millefolium*, *Delphinium Consolida*, *Vaccinium Oxycoccus*, and hundreds of others that could be mentioned.

The ease with which words of this kind are changed is very well shown by the spelling of the name of the ruffed-grouse in the *Century Dictionary*. The correct name is *Bonasa Umbellus* and it is so printed in most places, but under the vocabulary word *Bonasa* it is *B. umbella*. This is, of course, quite a different thing, and simply shows that some unguided proof-reader, observing that the termination *us* did not agree with *Bonasa*, changed it.

The fourth case is much the same as the one just considered. Substantives do not necessarily agree with the generic word, and it is a matter of much convenience and information to write them with an initial capital, *e. g.*, *Ilex Dahoon*, *Gaultheria Shallon*. In this form they stand out in bold relief, while if the lower case was used there would be the constant tendency to make them harmonize in termination with the genus word.

The use or disuse of this capital initial may not be a matter of much importance, but if there were no rule upon it there would be lack of that uniformity which is so much to be desired. If left to personal choice, some writers would use it and others would not. The British Association Revised Code (1865), the code of the French Zoölogical Society and that of the International Zoölogical Congress leave the matter to individual preference. The code of nomenclature of the American Ornithologists' Union (canon viii.) expressly decides against capitals, although agreeing 'that it is a trivial matter.' The International Botanical Congress of 1867 and the committee of the American Association (1894) agree as to its adoption. Therefore, in addition to the above mentioned reasons, botanists write these classes of specific names with an initial capital for the sake of uniformity in botanical writings.

F. H. KNOWLTON.

DENSITY AND DIAMETER OF TERRESTRIAL PLANETS.

RECENT determinations of the mass of Mercury have brought out a relation between the densities and diameters of the terrestrial planets which have not heretofore been thought possible on account of the supposed great density of Mercury.

The accompanying sketch shows graphically this relation. The planets have been plotted with their diameters in miles as abscissa and their density, the earth as one, as ordinates. It is seen that these points lie approximately in a straight line. The data has been taken from Harkness' 'Solar Parallax' and Young's Astronomy. The masses from the former and the diameters from the latter, except that the density of Mercury is that lately announced by Backlund from a discussion of Encke's comet.

The probable error of the density has been obtained by combining the probable

errors of the mass and diameter, and is shown in the sketch by the arrow-heads above and below the plotted points. It will be seen that the earth, Mars and the moon have much smaller probable errors than Mercury and Venus, since these latter have no known satellites to aid in determining their masses. If the most probable straight line be drawn with respect to the former, it will be as shown in the drawing. This line passes within the limits of the probable errors of all except Venus.

It will be observed that the straight line when prolonged to the left does not pass through the origin of coördinates, but cuts the ordinate at some distance above it. This indicates that a planet with a very small diameter would still have a considerable density. Meteoric stones of small diameter, when they reach the earth, do have a density about the same as that of terrestrial rocks, and this is about the density which is indicated in the drawing.

If this relation should prove to be the true law, then the mass of a terrestrial planet could be determined from its diameter. The mass of Venus so determined would be about one-tenth greater than as given. Venus is the only one of the five that is any more discrepant than might be expected from its probable error. The probable error of this planet as given may be too small. An increase of one-tenth in the mass, or a decrease of one-thirtieth in the diameter, would make Venus accordant. A sufficient increase in her mass would explain the movement in Mercury's perihelion. If the mass of Mercury proves to be as small as now supposed, that is about one-thirtieth that of the earth, it may explain some of his irregularities.

Prof. Young has pointed out that a body 200 miles in diameter near the sun would not be likely to be accidentally discovered, although it might be seen with some of the best instruments during transit across the