changes in the physiography of the region (Weldon). Such facts indicate that species are changing in essential specific characters and sometimes rather rapidly changing. The changes are not sufficient to be detected in cases where the descriptions are wholly qualitative or based upon the observation of a few individuals. But where a large number of individuals, taken at random, are measured the modes may be used as standards for reference. With the aid of such standards we can observe not only the fact of change, but the rate and the direction, and draw conclusions concerning the causes of specific change. If two modes occur in a species in one locality we can determine whether they separate farther and farther from each other, and the rate of such separation. A careful correlation of the facts of separation of modes with changes in environment will give us an insight into the causes of specific differentiation. In a word, the establishment of these place-modes for various species in various localities is the first sure step toward the solution of the problem of the Origin of Species.

The methods of this work are very simple. They involve the measurement of size, of proportions and other elements of form, and of color, by the color wheel;* they involve also counting repeated organs. The measurements, or counts, are to be grouped into classes on the basis of size. The means of measurement will naturally be fonnd ; but, most important of all, far more significant than the mean, is the *mode* or *the most frequented* class. The mode gives the typical condition of the lot of individuals measured.

The end of the old century or the beginning of the new one is a convenient time for making a number of these determinations, and it is on this account that I write to suggest to field naturalists that for a year or two they bend their efforts to the determination of place-modes. I am so convinced of the importance of this work that I am planning, with the cooperation of students, to work on this subject at the laboratory at Cold Spring Harbor during the coming summer, and I hope that simultaneous cooperative observations may be made at Woods Holl and other marine laboratories as well as at the various inland stations and by private collectors elsewhere. There is no fear of duplication of work, for two persons will hardly study the same species in one and the same locality.

* The color wheel is an instrument for determining the percentage of constituent elementary colors in any compound color. A small, cheap and convenient form of this instrument—called the color top—with standard colors may be bought for six cents of The Milton Bradley Company, Springfield, Mass.

Chas. B. Davenport.

Harvard University, March 2, 1899.

IDENTITY OF COMMON AND LABRADOR WHITEFISH.

The Common Whitefish of the Great Lakes was first very imperfectly described by Dr. Samuel L. Mitchill, in *The American Monthly Magazine and Critical Review* for March, 1818. The description, in fact, is so unsatisfactory that his contemporaries and later ichthyologists for more than fifty years supposed it to refer to the Cisco, or Lake Herring, *Argyrosomus artedi*. A good account of the Whitefish was published by Richardson in 1836, under LeSueur's name of *Coregonus albus*, a name published only a few weeks later than that of Mitchill ; but, like Mitchill's, unaccompanied by a sufficient description.

In 1836 Richardson established a new species of *Coregonus* upon a dried specimen which he received from Musquaw River, that falls into the Gulf of St. Lawrence, near the Mingan Islands, giving it the name *Salmo* (*Coregonus*) *labradoricus*. This has been retained in the literature as a distinct species up to the present time, although its close relationship to the Common Whitefish has sometimes been observed without recorded comment.

Systematic ichthyologists have found it difficult to show clearly the differences between the Common Whitefish and the Labrador Whitefish, as may be seen by referring to the monographs upon the Whitefishes by Jordan and Gilbert, Bean, and Evermann and Smith. They have been forced to rely, finally, upon a single character, the presence of several rows of teeth on the tongue to distinguish the two forms, and this was supposed to be constant and infallible.

The writer has recently had occasion, while

studying the fishes of the State of New York, to examine numerous specimens of the Common Whitefish from the Great Lakes and interior lakes of New York and of the so-called Labrador Whitefish from lakes of New York and New Hampshire and from rivers in New Brunswick and Labrador. As a result of these investigations he is forced to the conclusion that Richardson's species, *Coregonus labradoricus*, is identical with the Common Whitefish, *Coregonus clupeiformis*, there being no characters by which the two can be distinguished. Every individual of the Common Whitefish, young and old, was found to have teeth on the tongue and to possess the other characters by which Richardson's species has hitherto been separated.

This conclusion has an important bearing upon fish cultural operations by the States and the United States, as it will tend to simplify the work of artificial propagation and, perhaps, extend its scope.

TARLETON H. BEAN.

WASHINGTON, D. C., March 3, 1899.

A DATE-PALM SCALE INSECT.

DR. A. S. PACKARD writes from Biskra, Algeria, January 23, 1899: "I find myself in this oasis of the northern edge of the Sahara, where there are 170,000 date palms. In a beautiful garden I found a date palm, indeed several, affected by Coccids, which I enclose." The Coccids are crowded on the pieces of leaf and prove to be *Aonidia blanchardi*, Targioni-Tozzetti, Mém. Soc. Zool. France, 1892, Vol. V., p. 69. The insect, however, is not an *Aonidia*, but belongs to *Parlatoria*, and must be called *Parlatoria blanchardi*. It was originally found in the oasis of Ourir, and has never, I believe, been noticed since its original description until now rediscovered by Dr. Packard.* The figures of Targioni-Tozzetti represent it well, except that in one of them (Fig. 3) there is an impossible lobule between the median interlobular squames. The female turns bright olive green on being boiled in caustic soda. There are four small groups of circumgenital glands. This insect is likely to be of some economic importance, as it is allied to, though easily distinguished from, *Parlatoria victrix*, Ckll.; which, introduced from Egypt, has proved a pest on date palms in Arizona, California and Queensland. The manner of the infestation is quite the same in the two species.

T. D. A. COCKERELL.

MESILLA PARK, N. M., February 16, 1899.

* Unless Maskell's *P. proteus* var. *Palmæ*, found in Australia on date palms imported from Algeria, is the same, as indeed seems likely.

THE CHOICE OF ELEMENTS.

TO THE EDITOR OF SCIENCE: Once upon a time, according, I believe, to Messrs. Gilbert and Sullivan, a magnet hanging in a shop window fell in love with a silver churn, but, to its great distress, was unable to awaken any response. Its pathetic plaint ran:

"If I can wheedle
A *nail* or a needle
Why not a silver churn."

I used to think the magnet very unreasonable, because I supposed the atoms of iron and steel were necessarily drawn to it willy nilly, while there was no such tendency in the silver atoms, which were consequently quite unable to respond to its call. Major Powell (SCIENCE, February 17th) puts the matter in a new light, which awakens my sympathy for the magnet. It appears that the particles have choice. Both common sense and the dictionary tell us that choice is the power of choosing. Thus it was not of necessity, but of their free will, that the nails and needles were so responsive. The silver churn evidently considered the magnet ineligible. The case of the latter is a truly sad one, worthy of all serious commiseration, for if, as Major Powell tells us, the particles have intelligence, why should they not have love also? True, the magnet as a whole does not know, but what can assuage the grief of each of its myriad particles? Is there any hope that in time the silver will think better of it?

T. D.

HARVARD MEDICAL SCHOOL, February 27th.

ASTRONOMICAL NOTES.

TUTTLE'S COMET.

THIS comet was discovered by Méchain at Paris in 1790. Only a few observations were