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 taken, however, and the comet was rediscovered by Horace P. Tuttle at the Harvard College Observatory, January 4, 1858.

Johannes Rahts, of Königsberg, made the most complete discussion of the orbit, combining the observations of 1858 and 1871–2, having regard also to the perturbations. His value of the period is 13.7 yrs. The comet was next seen in 1885, and was expected during the present year. An ephemeris was accordingly distributed from Kiel, and it was probably by means of this that a faint comet, supposed to be Tuttle's, was discovered March 5th, by Dr. Wolf, as already announced. This ephemeris, as corrected by Dr. Wolf's observation, is given below.

Ephemeris.

G. M. T.			R. A.			Dec.	
1899.	Mar.	5.5	1^h	16^m	39^s	$+31°$	$36'$
		9.5	1	31	31	+30	58
		13.5	1	46	31	+30	16
		17.5	2	1	35	+29	30

HARVARD COLLEGE OBSERVATORY,
March 8, 1899.

A NEW STAR IN SAGITTARIUS.

FROM an examination of the Draper Memorial photographs, Mrs. Fleming has discovered a new star in the constellation Sagittarius. Its position for 1900 is: R. A. = $18^h 56.2^m$; Dec. = —13° 18′. It was too faint to be photographed on eighty plates taken between October 18, 1888, and October 27, 1897, although stars as faint as the fifteenth magnitude appear on some of them. It appears on eight photographs taken while it was bright. On March 8, 1898, it was of the fifth magnitude, and on April 29, 1898, of the eighth magnitude. A plate taken this morning, March 9, 1899, shows that the star is still visible, and is of the tenth magnitude. Two photographs show that its spectrum resembles those of other new stars. Fourteen bright lines are shown, six of them due to hydrogen. The entire number of new stars discovered since 1885 is six, of which five have been found by Mrs. Fleming.

E. C. PICKERING.

HARVARD COLLEGE OBSERVATORY,
March 9, 1899.

NOTES ON PHYSICS.

ELECTRIC WIRE WAVES.

THE theory of electric waves along wires has been worked out very completely by J. J. Thomson for the case of a wire surrounded by a cylindrical conducting shell. A further development of the theory, together with some interesting numerical results is given by A. Sommerfeld in *Wiedemann's Annalen*, 1899, No. 2. The author gives a rigorous solution of Maxwell's equations for electric waves transmitted along a straight wire of great length. This rigorous solution leads to an equation in Bessel's functions, the roots of which give the velocity of transmission and the damping coefficients. The author gives approximate solutions of this equation for wires of great conductivity, diameter of wire being rather small compared to the wave-length, and for wires of medium conductivity, diameter of wire being very small compared to wave-length. In these two cases the equation in Bessel's functions reduces to a logarithmic form for which the roots may be found without serious difficulty.

The author gives the following calculated results: Electric waves of 30 cm. wave-length travel along a copper wire of 4 mm. diameter at a velocity which is less than the velocity of light by one part in 30,000, and the amplitude falls to $\frac{1}{2.8}$ of its initial value at a distance of 1.5 kilometers.

Electric waves of 100 cm. normal wave-length (period $33 \cdot 10^{-10}$ second) travel at about three-quarters of the velocity of light along a platinum wire .004 mm. diameter, and their amplitude falls to $\frac{1}{2.8}$ of its initial value at a distance of only 17 cm.

The author also gives a diagram of the lines of electric force inside and outside of the wire, the lines of magnetic force being circles around the wire.

W. S. F.

A NEW INDICATOR FOR ELECTRIC WAVES.

A GALVANOMETER of medium sensitiveness is connected to a battery, a strip of silvered glass is included in the circuit and the coating of silver is scratched across so as to break the circuit. The strip is placed in moist air and the galvanometer shows a deflection. When the strip is