TABULATED RESULTS OF EXPERIMENTS WITH FLUORESCENT AND PHOSPHORESCENT COMPOUNDS.

Material.	By Natural Light.	By Ultra-violet Light.		By Roentgen Rays.	
		Fluorescence.	Phosphorescence.	Fluorescence	Phosphorescence.
Experiment No. 1.	White.	Light pink.	Dark red.		
" " 2.	"	Light green.	Bright green.	Green.	Faint green.
" " 3.	"	Light pink.	Orange yellow.	Faint orange.	None.
" " 4.	Yellowish.	Brownish-yel.	Light green.	Greenish-yel.	Very faint.
Powdered Calcite.*	White.	Bright pink.	Intense red.	Faint red.	Very faint.
" Willemite.*	Greenish-white.	Vivid green.	Faint green.	Bright yellowish green.	Very faint green.

this product was remarkable for its persistency.

The product of experiment number 2 is, in part, a silicate of zinc which somewhat resembles willemite in the color of its fluorescence, but it differs from willemite in being intensely phosphorescent. It is worthy of notice that without the trace of manganese the resulting zinc silicate will show no fluorescence nor phosphorescence, in this respect resembling the non-fluorescent specimens of willemite. An inference may be drawn from this fact as to one of the probable causes of the brilliant green fluorescence of the willemite found in Franklin, N. J.

W. S. ANDREWS.

SCHENECTADY, N. Y.,
December 29, 1903.

PALEONTOLOGICAL NOTES.

PLEUROCŒLUS VERSUS ASTRODON.

IN the *Annals of the Carnegie Museum,* Vol. II., p. 12, Mr. Hatcher reaches the conclusion that the dinosaurian genera *Pleurocœlus* and *Astrodon* are identical, and that *Astrodon,* having priority, should stand; furthermore, Mr. Hatcher concludes that *Pleurocœlus* may be the young of some larger species. Both of these conclusions are, it seems to me, open to doubt. The vertebræ and foot bones ascribed to *Pleurocœlus* greatly outnumber all the other vertebrate remains obtained from the vicinity of Muirkirk, Md., the locality where most of the vertebrates of the Potomac formation have been collected. The small, slender, cylindrical, blunt-pointed teeth supposed to be those of *Pleurocœlus* also outnumber all other teeth found in the Potomac formation, so that there is good reason to believe the identification to be correct. The type of *Astrodon* was an imperfect, large tooth, thrice the size of any ascribed to *Pleurocœlus,* and not over four of these teeth have been discovered, while there are none of intermediate size between the two. A section of a tooth of *Pleurocœlus* shows that the enamel is proportionately much thicker than in the tooth of *Astrodon* figured by Leidy, and while this may be partly due to a difference in the planes of the respective sections this evidence is proffered for what it is worth. Finally, it may be said that no large vertebræ or foot bones similar to those of *Pleurocœlus* have as yet come to light, so that for the present it would seem well to accept the validity of this genus.

* From Franklin, N. J.

THE ARMOR OF ZEUGLODON.

THERE is such a determined effort nowadays to derive the whales from armored ancestors and to foist a shield and buckler upon *Zeuglodon* that it requires some courage to suggest that at present there is no good *evidence* that either of these theories is correct. If any living cetaceans carry with them traces of armor, it seems strange that no partly armored form has come to light among the abundant cetacean remains found in Miocene deposits. As for *Zeuglodon* (*Basilosaurus*), the only armor that undeniably belongs to this animal consists of a few, somewhat pyriform, slightly keeled ossicles, the largest somewhat greater than a man's fist. There are two of these in the collection of the U. S. National Museum and no other traces of armor have been found, either by Dr. Andrews in Egypt, or by Mr. Schuchert in the southern states. There is no reason to suppose that the irregular fragment in the Koch collection, fig-

ured and described by Dr. Abel, had any connection with the living *Zeuglodon*. The ossicles above referred to are not symmetrical and, therefore, did not lie in the median line, while they are entirely too large to have been attached to the paddles. If a few scattered ossicles on a creature sixty feet long constitute armor, then *Zeuglodon* was a mail-clad animal; otherwise he seems to have been unprotected.

It may not be amiss once more to call attention to the fact that *Zeuglodon* was so highly specialized that it could not have been in the line of descent of modern whales; also that the same strata which contain remains of *Zeuglodon* have yielded half a dozen vertebræ, quite like those of a true whale, and indicating some animal from thirty to forty feet long. When more of this animal comes to light we shall probably have better information on the phylogeny of the cetacea than we have at present.

F. A. L.

FOSSIL FISHES IN THE AMERICAN MUSEUM OF NATURAL HISTORY.

UNDER an agreement with the trustees of Columbia University the American Museum has recently received on deposit the John Strong Newberry collection of fossil fishes. And this acquisition is noteworthy, in view of the fact that during later years the museum has been securing other important collections of fossil fishes. Among these are the Cope collection, consisting largely of North American forms, from the devonian of Pennsylvania, permian of Texas, carboniferous of Illinois and Ohio, and a very rich series from the Green River shales; the Jay Terrill collection from the devonian of Ohio, a gift of the late Mr. William E. Dodge; and the collection of cretaceous fishes from Mount Lebanon, secured from the American College in Syria by the president of the museum, Mr. Morris K. Jesup. The Newberry collection itself is probably the most important representation of American forms extant; its catalogue includes nearly six thousand numbers, and among these are many of the type specimens described in the 'Monograph on the Paleozoic Fishes of North America' and on the 'North American Triassic Fishes.'

An exhibition of fossil fishes has become, therefore, a need of the museum. And for its installation the director has recently set aside the corner circular room opening out of the reptile gallery. Its arrangement will be in charge of a new curator, Dr. Bashford Dean, a former student of Professor Newberry. The new gallery will include recent forms side by side with their fossil kindred, and will contain special guide cases to illustrate the structure and evolution of the more prominent groups.

SCIENTIFIC NOTES AND NEWS.

SIR JOHN MURRAY has been awarded the Lütke gold medal of the Russian Geographical Society.

DR. H. STRUVE, director of the Observatory at Königsburg has been appointed director of the Observatory at Berlin.

THE following fifteen candidates have been selected by the council of the Royal Society to be recommended for election into the society: Dr. Thomas Gregor Brodie, Major Sidney Gerald Burrard, Professor Alfred Cardew Dixon, Professor James Johnstone Dobbie, Mr. Thomas Henry Holland, Professor Charles Jasper Joly, Dr. Hugh Marshall, Mr. Edward Meyrick, Dr. Alexander Muirhead, Dr. George Henry Falkner Nuttall, Mr. Arthur Everett Shipley, Professor Morris William Travers, Mr. Harold Wager, Mr. Gilbert Thomas Walker and Mr. William Whitehead Watts.

DR. FREDERICK PETERSON has resigned the position of chairman and medical member of the New York State Lunacy Commission.

DR. L. E. DICKSON, assistant professor of mathematics in the University of Chicago, editor of *The American Mathematical Monthly* and associate editor of the *Transactions of the American Mathematical Society,* has been appointed research assistant to the Carnegie Institution. The object of his investigation is the application of group theory to certain problems in geometry and function-theory.

THE *N. Y. Evening Post* states that the grant to the Department of Astronomy, of Princeton University, has been increased by