kept in the water where the *Peridinium* were the thickest, and suffered no apparent injury. In consideration of these facts, it has been doubted whether the *Peridinium* was the immediate cause of the peculiar behavior and death of the fish which occurred on the 9th and 10th of September, especially as the weather had been phenomenally hot for several weeks previous to that date. I believe, however, that the *Peridinium* was the cause of the trouble, and not the hot weather nor manufacturers' waste, for the following reasons:

On the two or three days in which the mortality took place the water was extremely red.

The hot weather was followed by a cold wave a day or two before the mortality commenced.

The phenomena occurred in Greenwich Bay and off Nayatt, many miles from any considerable source of contamination.

Finally, the phenomena in question were noticed by very many persons throughout the whole range of the red water, while in neighboring portions of the Bay, for example, in the Warren River and in Bristol Harbor, where the temperature of the water is quite as high as in the red-water districts, no *Peridinium* and no mortality or unusual behavior of the marine animals was reported, though the regions were carefully canvassed.

There are many recorded instances of salt and of fresh water colored red probably by *Peridinium* of this or a similar species. H. J. Carter, in his account of 'The Red Coloring Matter of the Sea round the Shores of the Island of Bombay,' described the new species *P. sanguineum*, which produces this effect. He points out, also, that Darwin's description of the animalcule which he found to color the sea red, a degree south of Valparaiso, accords exactly with that of *Peridinium*. The animalcules which, according to Salt, produce the red color in the Red Sea, may also be due to this form, and the same cause may perhaps be ascribed to the red color of the sea off Iceland in 1649. Porter quotes "the following passage from an eye witness of a similar occurrence at Porebunder, on the coast of Khattywar, India, where the red water is extremely common, viz.: 'the color of the sea water on Saturday evening last, the 27th of October, 1849, was changed from its usual tint to a deep red, emitting a most foul smell; the fish speedily were all destroyed and washed upon the beach in large quantities, etc.'" Though the narrator believed that this might be due to a submarine eruption of mud, Mr. Carter is inclined to ascribe it to some 'animalcule,' most probably *Peridinium*. He also directs attention to the Mosaic account of the plague of Egypt given in the following verses: "And all the waters that *were* in the river were turned to blood." "And the fish that *was* in the river died; and the river stank, and the Egyptians could not drink of the water of the river; and there was blood throughout all the land of Egypt."

A. D. MEAD.

ZOOLOGICAL BIBLIOGRAPHY.

TO THE EDITOR OF SCIENCE: The report on Zoological Bibliography, summarized in your issue of November 4th, is evidently conceived primarily from the point of view of the bibliographer, but from that of the working zoologist it is open to criticism in several details. Chief among these is rule 3, in which the standpoint is made especially conspicuous from the unwarranted assumption that the publication of the separate papers of a volume before the volume as a whole is issued is 'improper,' while the indefinite delay of their publication is 'proper.' It seems to the writer that the propriety or impropriety really consists in the indefiniteness of date, which may or may not accompany the separate publication. This may be, and should be, avoided in a much more simple and easy manner than the remedy proposed by the committee. It is only necessary that the separates as issued should each bear its own date and that the table of contents issued with the volume should state under each title 'author's copies issued' at such and such a date. For the progress of science, as well as the convenience of workers, it is much more important that separate papers should be promptly issued and distributed to specialists than that the volume should be issued at all. The above method has been employed by the Philadelphia Academy of Natural Sciences, and the method of separate publication of all papers has been adopted by most of the Washington

societies, as well as the National Museum, to the very great convenience of everybody concerned. I have never found any difference of opinion among working zoologists on this point.

Wm. H. Dall.

Smithsonian Institution, November 5, 1898.

THE NERNST LIGHT.

To the Editor of Science: Several months have passed since the report of the discovery of a new incandescent electric light by Professor Nernst, of Göttingen. It was rumored that a Berlin firm had bought the patent for five million Marks, and that we were on the eve of another revolution in the illuminating industry, but till recently very little reliable information has been obtained. In the meantime Professor Nernst has been developing and perfecting his invention, and his researches have been crowned with such success that we may look forward to the early appearance of the finished lamp, and perhaps the confirmation of the most sensational rumors.

The astonishing progress in illumination during recent years has been characterized by a great race between gas and electricity. Scarcely had the incandescent light secured a firm hold in the practical world when Auer von Welsbach made his famous improvement on the gas light, and the possibility of the use of acetylene became apparent, so that many believed electricity would after all have to yield the supremacy to gas. Nernst now reclaims the palm for electricity, for he expects that the cost of his light for a whole evening will be no more than that of the Edison for an hour.

The Nernst light requires neither vacuum nor tender filaments. The essential point of the invention is that when substances like magnesia (magnesium oxide) and clay are heated above 3,000 degrees Celsius (6,000° Fahr.—far above the melting point of platinum) a very weak current is sufficient to keep them in an intensely luminous condition. Either direct or alternating currents may be employed, and the magnesia is little injured by use. The only difficulty that remains to be surmounted is a practical and inexpensive appliance for heating the substance to the necessary temperature. The work is, however, progressing and those who know the ability and courage of the inventor are confident that he will succeed.

Professor Walter Nernst, though unknown to most people, is a scholar of high rank in the purely scientific world, and his works or their translations are to be found in almost every scientific library. His brilliant researches won him the newly established chair of physical (theoretical) chemistry at Göttingen, and he is surrounded by advanced students of the most varied nationalities, all of whom greatly admire his fertile mind and genial, inspiring manner. His new invention is but another example of the benefit that patient, conscientious scientific study is sure to bring to the whole world.

H. C. Cooper.

Heidelberg.

THE DAY OF THE WEEK.

To the Editor of Science: The statement made in your issue of Science for October 18, 1898, by Mr. Edward L. Stabler, that 'I have not found any published rule for the simple problem of determining mentally the day of the week without reference to a calendar or lengthy table' leads me to send you the following formula, which I have never seen in print, but which is of so simple derivation that it may well have been used by others than myself.

Let Y represent any year of the Gregorian calendar and D the number of any day in that year, *e. g.*, for February 1, 1898, $Y = 1898$ and $D = 32$. Neglecting fractions, put

$$Y + D + \frac{Y-1}{4} - \frac{Y-1}{100} + \frac{Y-1}{400} = 7n + r$$

where n is the quotient and r the remainder obtained by dividing the first member of the equation by 7. The remainder r then represents the number of the day of the week, *e. g.*, if $r = 1$ the given date falls on Sunday, etc., and if the division is exact, $r = 0$, it falls on Saturday. For the date given above we have

Y		1898
D	+	32
$(Y-1)/4$	+	474
$(Y-1)/100$	−	18
$(Y-1)/400$	+	4
		7)2390
n		341
r		3 = Tuesday.