Anniversaries of Science

December 13, 1889.—The last of Hertz's researches on the relation between light and electric waves was presented before the Berlin Academy of Sciences.

It is light, just as good as any other light. It travels at the same pace, it is reflected. and refracted according to the same laws; every experiment known to optics can be performed with this aetherial radiation electrically produced, and yet you cannot see it. Why not? For no fault of the light, the fault (if there be a fault), is in the eye. . . . . These electro-magnetic waves have long been known on the side of theory, but interest in them has been immensely quickened by the discovery of a receiver or detector for them. The great though simple discovery by Hertz of an "electric eye," as Sir W. Thompson calls it, makes experiments on these waves for the first time easy or even possible. We have now a sort of artificial sense organ for their appreciation,—an electric arrangement which can virtually "see" these intermediate rates of vibration.

—Sir Oliver Lodge: *The Modern Theory of Light* in University College Magazine, July, 1889.

December 14, 1911.—Amundsen reached the South Pole.

December 14 dawned. It seemed to me as if we slept a shorter time, as if we ate breakfast in greater haste, and as if we started earlier on this morning than on the preceding days. As heretofore, we had clear weather, beautiful sunshine, and only a very light breeze. We advanced well. Not much was said. I think that each one of us was occupied with his own thoughts. Probably only one thought dominated us all, a thought which caused us to look eagerly toward the south and to scan the horizon of this unlimited plateau. Were we the first or ——?

The distance calculated was covered. Our goal had been reached. Quietly, in absolute silence, the mighty plateau lay stretched out before us. No man had ever yet seen it, no man had ever yet stood on it. In no direction was a sign to be seen. It was indeed a solemn moment when, each of us grasping the flagpole with one hand, we all hoisted the flag of our country on the geographical South Pole, on "King Haakon VII Plateau."

—Amundsen: *Expedition to the South Pole* in Bulletin of the American Geographical Society, November, 1912.

December 15, 1920.—The Bureau of Standards broadcast the first weather and crop reports of the Department of Agriculture.

Through the cooperation of the United States Bureau of Standards the Bureau of Markets recently made arrangements for sending "Daily Radio Marketgrams" from the Washington radio station of the Bureau of Standards. . . . The "Daily Radio Marketgrams" are wirelessed at 5 p.m. each business day, and are received by hundreds of amateur wireless operators within a 200-mile radius of Washington. These operators relay the information to farmers, farmers' organizations, shippers' organizations, newspapers, and others concerned with the marketing of farm products. Certain newspapers have installed wireless equipment to receive the reports direct and other newspapers are making similar arrangements. . . . In conducting the experiment the Bureau of Markets has the benefit of the experience and advice of some of the Nation's foremost wireless experts, and marketing agencies everywhere are watching the work with great interest.

—*Yearbook of the Department of Agriculture,* 1920.

December 15, 1859.—Gustav Kirchhoff communicated to the Berlin Academy of Sciences the principle that glowing vapors absorb the same radiations that they emit, thus accounting for Fraunhofer lines in the solar spectrum.

The Spectroscope was turned to the sun and some of the innumerable dark lines in its spectrum were mapped by Fraunhofer. But it was not until 1859 that Kirchhoff and Bunsen found the key to these lines; they showed that most of them are caused by absorption in the very shallow and comparatively cool atmosphere of the sun. Each element has its characteristic lines which appear wherever the absorption takes place, whether in the laboratory, in the sun, or elsewhere. Here then is a means of analyzing the sun in the chemist's sense. It is found that almost all common elements that we find at the surface of the earth are also plentiful in the sun.

—Frank Schlesinger: *Astronomy* in The Development of the Sciences.

Science News-Letter, December 4, 1926

Milton is Noncommital

Whether the sun predominant in Heaven
Rise on the earth, or earth rise on the sun;
He from the east his flaming road begin,
Or she from west her silent course advance
With inoffensive pace that spinning sleeps
On her soft axle, while she paces even,
And bears thee soft with the smooth air along;
Solicit not thy thoughts with matters hid;
Leave them to God above, Him serve and fear.

—Milton: *Paradise Lost, viii.* (1667)

Science News-Letter, December 4, 1926

The little elephant shrew has features of the elephant, rat, and kangaroo.

The only difference between the radio waves that make music audible a thousand miles away, and light rays that make the stars visible from a distance of billions of miles, is the length and frequency of the waves.

GENERAL SCIENCE

Darwin's Accuracy

Quotation from DARWIN.—Gamaliel Bradford.—*Houghton Mifflin.*

The fundamental principle of all scientific observation is accuracy, and no one knew this better than Darwin. No one understood better than he the subtle, treacherous influences that are always at work, distracting, impairing, and distorting exact and lucid vision. There is the danger of seeing what we are accustomed to see and therefore think we see. There is the danger of seeing what others have seen and described before us. There is the supreme danger of seeing what we wish to see, what accords with some preconceived theory or dogma. Against all these dangers Darwin tried to be ever on his guard, and he is constantly warning others of them and emphasizing the importance of pure accuracy and the enormous difficulty of it. "Good heavens, how difficult accuracy is!" Among all the merits of the scientist he values accuracy highest, and instinct and the ability to record facts correctly: "I value praise for accurate observation far higher than for any other quality." And especially in one admirable passage he stresses and reiterates both the difficulty and the value: "Accuracy is the soul of Natural History. It is hard to become accurate; he who modifies a hair's breadth will never become accurate . . . Absolute accuracy is the hardest merit to attain, and the highest merit." . . . One cannot be too careful, too scrupulous, about one's statements, or too anxious to correct them, when one has made a mistake. And Darwin gets up in the middle of the night and arouses a slumbering friend to explain that, after all he felt the sense of the sublime more fully in the forests of Brazil than on the top of the Cordilleras.

Science News-Letter, December 4, 1926

ENTOMOLOGY

Trap Takes Bug Census

Screened boxes of sticky fly paper help United States Bureau of Entomology experts tell how many bugs are parked on a fruit tree.

Counting the individual insects that constitute crop pests give entomologists valuable data on the degree of infestation in different orchards and the time of the year when the pest is most numerous. The box is held under the branches with one hand while they are shaken against it with the other. When a tree is finished the lid of the box is closed and the insects are counted in the laboratory.

Science News-Letter, December 4, 1926