

American Association for the Advancement of Science.

NEW YORK MEETING, DECEMBER 27, 1906, TO JANUARY 1, 1907.

BY WILLIAM H. HALE, PH.D.

The meeting of the American Association for the Advancement of Science held at Columbia University, New York city, December 27, 1906, to January 1, 1907, is believed to have been the largest gathering of American men of science, covering all departments, that has ever convened, and the proceedings were of interest and importance commensurate with the occasion. The official register of 928 names must be supplemented by several hundred members of the nineteen affiliated societies.

The great historical feature of the occasion was the unveiling of busts of American men of science, presented to the American Museum of Natural History by Dr. Morris K. Jesup, whose previous benefactions to this museum were so munificent. This ceremony was held at the museum on Saturday afternoon, December 29, before a vast and brilliant assembly. Owing to the illness of J. Pierpont Morgan, Dr. Henry F. Osborn presided. Although the donor was present, the address of presentation on his behalf was made by Dr. H. C. Bumpus, director of the museum, and the address of acceptance by ex-Ambassador Joseph H. Choate. Brief memorial addresses were made in reference to each of the scientists as follows: Benjamin Franklin, by Dr. S. Weir Mitchell; Alexander von Humboldt, a letter from Baron Speck von Sternberg, of the German Embassy at Washington; John James Audubon, by Dr. C. Hart Merriam; John Torrey, by Dr. N. L. Britton; Joseph Henry, by Dr. R. S. Woodward; Louis Agassiz, by Director Walcott of the U. S. Geological Survey, and letters from Rev. Dr. E. E. Hale and Dr. F. W. Putnam; James Dwight Dana, by Dr. A. T. Hadley; Spencer Fullerton Baird, by Dr. Hugh M. Smith; Joseph Leidy, by Dr. Wm. K. Brooks; and Edward Drinker Cope, by Dr. H. F. Osborn. Humboldt was included in this list because of the great work done by him in America.

Another feature which will make this meeting memorable was the organization of a new section of education, to be known as Section L. This, however, is simply a recognition of the increasing affiliation of the American Association for the Advancement of Science with educational work.

Among the persons present at the meeting was Dr. William P. Blake, who was a member of the old Association of American Naturalists and Geologists, but not present at the meeting in 1848 when the older association gave place to the present one.

At the general session a resolution was passed providing for the protection of the Appalachian forests.

A novel and very interesting feature of the meeting was the reception and exhibition of recent progress in science by the New York Academy of Sciences in conjunction with the American Museum of Natural History, comprising several thousand exhibits in eighteen departments of science. Out of such a mass of detail almost any attempt at selection seems invidious; yet I may mention an ingenious rotating apparatus to show the movement of intestines and stomach during digestion, prepared from photographs of the intestines of a small animal taken by the X-rays, after feeding the animal a solution of bismuth, which rendered them opaque enough to be photographed; an ingenious and novel gyroscope, perplexing indeed to explain; casts showing cancer in successive stages of cure by radium, and a photograph of radium spilled on a carpet, made by the radium itself on a sensitive plate, and thus enabling the radium to be recovered by discovering its exact location. An electric bulb with filament of a compound of silicon and carbon glowed with unrivaled brilliancy, and at great economy of electricity.

Of the many joint meetings of sections and affiliated societies, the most important was that of the American Association for the Advancement of Science and the American Society of Naturalists with its affiliated societies for the discussion of the Biological Significance and Control of Sex, which was treated by several speakers from both botanical and zoological points of view. As regards pre-natal control of sex, the symposium was almost entirely destructive of previous theories. The consensus of opinion was that no means of controlling the sex of offspring can be relied on, so far as already known.

The annual address of the retiring president, Dr. C. M. Woodward, was on "The Science of Education."

Of the vice-presidential addresses I was able to hear only two, those of Dr. George N. Rice on "The Contributions of America to Geology," and of Dr. Irving Fisher on "Why the Laissez-Faire Doctrine Failed." Dr. Rice showed that these contributions were of much importance along several lines, beginning with the theory of continent building. The old notion of alternating regions of ocean and continent leading to a belief in some lost Atlantis has given place to the knowledge that the present continental areas are in fact primeval, though of course varying greatly in

areas and in height of emergence of portions and depth of submergence of portions from age to age.

Dr. Fisher, while pointing out that the reaction from the Laissez-Faire or let-alone system in economics was liable to lead to undue socialistic theories, indicated the fallacy of that system in both its postulates. It is neither true that men in general can select that line of conduct which is in all respects most for their own interest, nor that such conduct does conduce in all cases to the general welfare of society.

Dr. H. B. Ward, in his vice-presidential address to Section F, explained why some persons who drink water containing typhoid germs escape, while others are infected. The germ does not enter the system if the intestinal lining is intact, but if parasites bore into this lining the typhoid enters there. Other parasites destroy the coagulability of the blood, causing bleeding piles; others again produce swellings of the intestines, which impede the progress of the contents and serve as points of deposition of solid matter, making a sort of pearl in the intestine—which of course is where nobody wants to wear pearls of any sort.

The meeting at the new site of the College of the City of New York, corner of Amsterdam Avenue and West 138th Street, was one of the most interesting features of the entire session. Few even in New York know what a group of palaces, costing altogether six million dollars, is here nearing completion. This meeting was given up to Niagara Falls with two addresses, one by Dr. John M. Clark on the effort to save Niagara; the other by Dr. C. F. Chandler on the industries of Niagara, with an exhibition of some of the wonderful products of the various manufactures there, notably aluminium. Some account of the Goldschmidt process of welding by "thermite," which is powdered aluminium mixed with iron oxide; and after showing many other electrolytic products, he closed with bare mention of nitrates or plant food from the atmosphere, which when it can be done cheaply will increase the production of the soil.

The foundation of the Entomological Society of America was another important result of the meeting. The lecture before this new society by Dr. W. M. Wheeler on "The Polymorphism of Social Insects" was limited to discussion of ants, omitting termites, bees, and wasps. The variety of forms developed in members of the same kind of ants was indeed surprising. On the one hand we saw on the screen a mother ant one thousand times as large as her worker progeny. This is a species that infests the nests of termites; the workers must be minute in order to traverse the narrow galleries into the storehouse of the termites which they despoil. The other were parasitic ants where the mother was actually smaller than her worker brood. This is because the parasitic larvæ are so overfed by their deluded hosts, who blindly suppose them to be extra fine grubs of their own family till the ruthless invaders at last get control and destroy the original possessors.

By far the greatest array of papers was presented in the Chemical Section and the American Chemical Society, and of these I must make special mention of two on the origin of radium. Prof. Bolton, of Yale, and Prof. Rutherford, who read these papers, agree that radium is derived from actinium. There are probably many steps in the evolution of radium, beginning with uranium; one of these steps is actinium.

The Geological Society of America and the section of Geology and Geography of the American Association for the Advancement of Science also had a large programme, and continued their session for reading papers even during the unveiling of busts of men of science in the same building.

It should be said in general that much interesting material was presented in every one of the sections, far exceeding space available here to discuss.

Early English Gunpowder.

A bucket containing bullets and gunpowder has been discovered in the roof of Durham Castle, where it is believed to have been walled up about the year 1641, when the castle was being prepared to withstand a Scottish raid. The bullets are molded spheres of two sizes, and, according to the analyses of Messrs. Silberrad and Simpson, consist of a little over 99 per cent of lead, with iron and silver, and traces of bismuth, arsenic, and antimony. The gunpowder is not granulated like that of the present day, and was evidently prepared by simply mixing the ingredients. It contains about 1 per cent of moisture, and the proportion of the constituents calculated on the dry powder is practically identical with that of the black gunpowder of to-day, viz., niter, 75 per cent; carbon, 15 per cent; and sulphur, 10 per cent. It is pointed out by Messrs. Silberrad and Simpson that this is a remarkable fact, since the gunpowders made in England at that time contained a considerably larger amount of sulphur. The only gunpowder with the modern proportions in use in the seventeenth century was Prussian musket powder, and hence it is suggested that the Durham powder was probably of Prussian origin.—Knowledge.

Correspondence.

The Hurricane of September 26 and 27, 1906, at Pensacola.

To the Editor of the SCIENTIFIC AMERICAN:

Believing that such peculiar results of the hurricane that visited this place September 26 and 27 will prove of interest to your readers, I take the liberty of writing you.

The hurricane blew from twelve to fourteen hours, and the leaves upon the trees that were not blown down were either blown off or whipped until the life was out of them, so that the live oak trees and other evergreens presented the appearance of having been scorched with fire. Immediately after the hurricane, all trees and shrubs put out new leaves like unto spring time. In a few days peach trees were in full bloom, then followed pear trees and plum trees. In the course of two or three weeks the pecan orchards were in full bloom. All kinds of lilies put up new shoots, and have been in bloom ever since. Roses and other shrubs have also been blooming just the same as in March and April. For the past two or three weeks mulberry trees have been laden with ripe fruit. Fig trees put out new leaves, and are now in full fruit. Of course, it is not probable that any of these fruits aside from the mulberry will ever reach maturity, as this is the time of the year that occasional frosts occur.

Pensacola, Fla.

CHARLES H. BLISS, Mayor.

Gun Erosion.

To the Editor of the SCIENTIFIC AMERICAN:

In your issue of November 24 Mr. J. R. Wilkinson cites some facts bearing on the erosion of rifle guns as detrimental to their effective use. I would bear witness to some facts on the other side of the question.

During the late winter or early spring of 1863 the 1st Indiana Heavy Artillery were armed with 30-pound Parrott rifles, and during the following June and July took active part in the siege of Port Hudson, lasting forty-two days, firing every day and a large per cent of the nights. During this engagement we were supplied with two kinds of shells, one with a brass collar or band, that was intended to swell by the impact to fill the rifles and give it the whirl necessary to prevent "tumbling." I do not recall the name of the shell.

The other was the Hotchkiss, a perfectly plain shell not provided with anything of the kind, and "tumbled" about every third or fourth shot, and were promptly condemned and never after used. These guns were followed by the same men through many engagements to the close of the war in April, 1865.

The last work was at the siege of Mobile, April, 1865, where effective work was done at a distance of 3,600 yards, and at 3,000 yards four of the same guns drove a fleet of four ironclads of the enemy from the Texas River in four hours' firing.

For accurate and effective artillery firing these 30-pound Parrott guns were just as reliable, after nearly three years of constant campaigning, and throwing tons of shot and shell, as they were at the first fire.

The shell never "tumbled," and I presume there was no erosion.

RUFUS DOOLEY,

Ex-Artillerist Army of the Gulf.

Rockville, Ind., November 26, 1906.

Official Meteorological Summary, New York, N. Y. December, 1906.

Atmospheric pressure: Highest, 30.71, date 19th; lowest, 29.64, date 6th; mean, 30.12. Temperature: Highest, 57, date 15th; lowest, 8, date 24th; mean of warmest day, 49, date 15th; coldest day, 14, date 24th; mean of maximum for the month, 39.6; mean of minimum, 25.8; absolute mean, 32.7; normal, 34; deficiency compared with mean of 36 years, -1.3. Warmest mean temperature for December, 42, in 1891. Coldest mean, 25, in 1876. Absolute maximum and minimum for the month for 36 years, 68 and -6. Average daily excess for the year 1906, +1.6. Precipitation, 3.53; greatest in 24 hours, 0.98; date, 30th and 31st; average of the month for 36 years, 3.40. Excess, +0.13; deficiency for the year 1906, -2.77. Greatest precipitation, 6.66, in 1884; least, 0.95, in 1877. Snow 0.5. Wind: Prevailing direction, N. W.; total movement, 10,772 miles; average hourly velocity, 14.5; maximum velocity, 58 miles per hour, date, 7th. Weather: Sleet, 9th, 10th, 16th. Fog: 10th, 20th, 21st, 29th.

The cost of copper refining by electricity has been reduced greatly in recent years in the American refineries by the introduction of mechanical devices for casting the anode slabs of crude copper and for charging and discharging the vats. According to an article by Mr. John B. C. Kershaw in Cassier's Magazine, the expenditure on hand labor has thus been greatly reduced, and the time during which vats are laid off for recharging and cleaning has been curtailed. The current density used has also been greatly increased by the use of improved methods of circulating the electrolyte, and by the addition of a very small percentage of hydrochloric acid to the copper sulphate solution.