

NOTES ON THE AMERICAN ASSOCIATION MEETING.
BUFFALO, N. Y.

BY HORACE C. HOVEY.

Some changes have been recently made, and others have been suggested, as to the management of the Association for the Advancement of Science. There has been for some time a generous rivalry between the affiliated societies and the corresponding "sections" of the American Association for the Advancement of Science, which is now settled by an understanding that their work may be amicably combined hereafter. A number of constitutional changes were referred to a special committee that is to report next year. The plan tried this year will be continued, of requiring abstracts of sectional papers to be sent in at least a month in advance, to allow the issuing of a preliminary programme. These papers, moreover, will henceforth be published only by title in the volume of annual proceedings, merely the presidential and vice-presidential addresses appearing in full. An important and desirable change will be that these valuable and carefully prepared addresses, instead of being crowded into the first day of the meeting, will be given on the evenings during the week, in lieu of what have been styled the "complimentary lectures." After a spirited discussion it was decided by a strong majority to hold the next regular meeting at Detroit, August 9, thus giving time for a full week, as required by the constitution, before the date fixed for the British Association to meet at Toronto. Resolutions were passed in favor of the early adoption of the metric system of weights and measures by an act of Congress, to take effect by the first of January, 1898. Action was also taken favorable to vivisection in the interests of science. A committee of five was appointed to attend the International Scientific Congress to be held next summer at St. Petersburg, Russia; namely: Professors Cope, Hall, Emerson, Rice and Wallcott. It was agreed that the fiftieth anniversary of the American Association for the Advancement of Science should be marked by a jubilee meeting, to be held in 1898 in the city of Boston.

The attendance this year was less than formerly, the whole number being 333, of whom 112 were new members. The number made fellows was 82, with one made a fellow for life and one an honorary member. The officers chosen for the next meeting were as follows: President, Wolcott Gibbs, of Newport, R. I. Vice-presidents: A, Mathematics and Astronomy, W. W. Beman, of Ann Arbor, Mich.; B, Physics, Carl Barus, of Providence, R. I.; C, Chemistry, W. P. Mason, of Troy, N. Y.; D, Mechanical Science and Engineering, John Galbraith, of Toronto, Canada; E, Geology and Geography, I. C. White, of Morgantown, W. Va.; F, Zoology, G. Brown Goode, of Washington, D. C.; G, Botany, George F. Atkinson, of Ithaca, N. Y.; H, Anthropology, W. J. McGee, of Washington, D. C.; I, Social and Economic Science, Richard T. Colburn, of Elizabeth, N. J. Permanent Secretary, F. W. Putnam, of Cambridge, Mass. (office, Salem, Mass.). General Secretary, Asaph Hall, Jr., of Ann Arbor, Mich. Secretary of the Council, D. S. Kellicott, of Columbus, O. Secretaries of the Sections: A, Mathematics and Astronomy, James McMahon, of Ithaca, N. Y.; B, Physics, Frederick Bedell, of Ithaca, N. Y.; C, Chemistry, P. C. Freer, of Ann Arbor, Mich.; D, Mechanical Science and Engineering, John J. Flather, of LaFayette, Ind.; E, Geology and Geography, C. H. Smyth, Jr., of Clinton, N. Y.; F, Zoology, C. C. Nutting, of Iowa City, Ia.; G, Botany, F. C. Newcombe, of Ann Arbor, Mich.; H, Anthropology, Harlan I. Smith, of New York, N. Y. Treasurer, R. S. Woodward, of New York, N. Y.

A decided increase was noted in the number of papers read in the various sections, and many of them were of an exceptionally high character, indicating progress in the main work for which this organization exists, namely, the "advancement of science." Some of the most valuable and important communications were too technical to interest the general reader. This was especially true in the departments of mathematics, astronomy, chemistry and physics. The papers in the section of social and economic science, on the other hand, dealt largely with questions bearing on political and monetary matters, that attracted disproportionately the notice of the local press to the exclusion this year of papers more worthy of remark from a strictly scientific point of view. It is respectfully suggested that the so-called "press secretaries" should each take pains to collate in a readable form the best features of their respective sections, and put them at the disposal of the scientific journals of the country. Instead of attempting to report the work simultaneously done in all the nine sections, we shall content ourselves with detailing what was done in two of them, as specimens of the rest.

THE GEOLOGICAL SECTION.—The opening address by Prof. Emerson has been given by us elsewhere. The following were some of the more noteworthy papers:

Dr. Edmund O. Hovey, of New York, gave a résumé of his microscopical study of an artesian well drilled in 1895 through the coral reefs at Key West, Florida, for 2,000 feet, of which samples were taken at every 25

feet. The surface is an oolite changing to limestone, alternating with beds of sand rock containing masses of porous or compact limestone. The indications show for much of the depth a shallow water or beach formation. Most of the rock is fossiliferous, the lamellibrachs and foraminifera being especially abundant. Minute forms of life predominate. The summit of the Vicksburg beds of the Eocene era was placed at 700 feet below the surface. Miocene and Pliocene were not separated from each other, but their top is 50 feet below the surface. An interesting feature is the frequent recurrence of a minute quantity of fine grained angular quartz sand.

The tuff beds of the Connecticut Valley Trias were described by Prof. B. K. Emerson, showing that great beds of volcanic ashes are associated with sheets of igneous rock, in the Mount Holyoke range, and that the flowing lava became mixed with sedimentary matter. Pitchstone, or volcanic glass, has also been found. The lava flow hardened on top, broke up and rolled over, just as modern lava does, mingling fragments from the top with matter at the base.

There is a famous region in the Dakotas where wells have been sunk into a vast artesian basin. This was described by Prof. J. E. Todd, who stated that the most abundant supply is from the Sioux quartzite, the lowest bed yet tapped. The maximum height to which the water from these wells rises is greatest in the Black Hills, and diminishes toward the east, on the theory that, as the distance from the original source increases, the water leaks from the lower into the higher beds, and thus loses its "head."

Two papers on the geology of California were read by Prof. J. P. Smith, of the Leland Stanford University. He proved the close parallelism with the beds of Europe by the terraces of the Triassic and Jurassic eras. He described the physiography of the region, and discussed the origin and growth of the mountain ranges, illustrating his remarks by aid of the stereopticon. The main orographic movements were in the Tertiary and Post-tertiary erosion and the uplifts of the Coast Range and the Sierra Nevada. He said that the great valley of California was never an arm of the sea, being full of river deposits. He traced out the ancient river systems, and spoke of recent geologic changes.

The Dalles of the St. Croix, short canyons in Minnesota and Wisconsin, were made the subject of a paper by Mr. Warren Upham. He attributed their erosion to the Aftonian and Wisconsin stages of the glacial period. Previous to the Ice Age a watershed of trappean and Upper Cambrian rocks extended across the present valley. The basin above the Dalles was once drained by a watercourse running to the Mississippi River, between Anoka and Minneapolis, and which was the preglacial St. Croix. Below the Dalles was the Apple River, flowing along where the river now expands into the Lake St. Croix. The channeling of the picturesque Dalles, the central attraction of the proposed interstate park, is attributable to an interglacial river of the Aftonian time, but the gorges have undergone further changes by postglacial stream erosion, and their walls of trap rock have been riven by frost along vertical joint planes.

The evolution of the shark was discussed by Prof. E. W. Claypole, whose observations were based on recent discoveries of fossil remains in the Cleveland shales of Devonian age, whose preservation makes it possible to restore these ancient fish and compare them with existing species. One important fact is that their mouth was at the end of the head, just as in common fishes, instead of being on the under side, as in most modern species of sharks. Other papers on Devonian fishes were read by Dr. C. R. Eastman and Mr. F. K. Mixer, who also exhibited some very fine specimens.

Prof. T. H. McBride exhibited and described some admirably preserved carboniferous plants from Iowa, showing medullary rays, and proving that Sigillaria and Diploxylon are really exogenous trees related to the conifers, though masquerading as ferns. The discovery and demonstration of these intermediate forms of tree life in Carboniferous times is of great importance.

The Cretaceous clay marl bed at Cliffwood, N. J., is the lowest member of the Matawan formation, and it was described by Mr. A. Hollick, who carefully examined its mollusks, crustaceans and leaves as representing the transition from estuary to marine conditions.

The striking features in the topography of West Virginia and Western Pennsylvania were discussed by Dr. J. C. White, who referred the origin of the high terraces of the Monongahela to the glacial lake that was formed by the ice that dammed up the preglacial drainage that was northward into Lake Erie.

Rev. Horace C. Hovey read two papers on the "Making of the Mammoth Cave," and the newly found "Colossal Cavern," of Kentucky, which may be found in full in previous numbers of the SCIENTIFIC AMERICAN.

A new theory in geology was offered by Dr. W. J. McGee, under the title, "Sheetfield Erosion," which aroused much interest and was followed by favorable discussion. He described the peculiarly interesting

features of Papageria, in Arizona and Sonora, a hot and arid area of broad plains, with scattered sierras which rise abruptly. The plains and the mountains alike consist of planed edges of similar strata, thinly veneered with debris. The main agency in this wide planation is storm erosion, active only during a few consecutive hours or days of occasional freshets. Thus the characteristic form of water flow is not in streams, but in sluggishly moving sheets which may be called sheetfloods; these sheetfloods are amply supplied with rock matter, which is mechanically disintegrated rather than chemically reduced, and which is thus an efficient eroding substance; and throughout most of the region the tendency of the storm waters is not to carve valleys, but to plane broad belts two to twenty miles or more in width. It seems certain that this distinctive agency has produced the distinctive conformation and structure of the province.

Death of Prof. Fowler, the Phrenologist.

Prof. Lorenzo Niles Fowler, a phrenologist who for nearly half a century has been prominent in making the science of phrenology widely known and properly valued, died of paralysis on September 2, in West Orange, N. J., at the home of his sister, Mrs. C. Fowler Wells. He was born June 3, 1811, at Cohocton, N. Y., and was consequently just over 85 years old. He had returned to the United States only a fortnight ago, after having been for thirty-five years in Great Britain, where he was engaged in phrenological work. Among those who had at different times been phrenologically examined by him were the late Nicholas III, Czar of Russia; Dwight L. Moody, Horace Greeley, Harriet Beecher Stowe, Ralph Waldo Emerson, Walt Whitman, Samuel F. B. Morse, Cyrus W. Field, Sir Henry Irving, Dr. Joseph Parker, whose church Prof. Fowler attended in London; John Bright, Richard Cobden, Sir John A. Macdonald, Charles Dickens and William Cullen Bryant.

Prof. Fowler was a farmer's son, and was sent to Amherst College, where he was a classmate with Henry Ward Beecher, with the idea of his becoming a Presbyterian minister, a profession which he relinquished to devote his life to the then comparative new science of phrenology, his brother, Orson S. Fowler, being associated with him. They at first met with considerable opposition, which Prof. Fowler did much to overcome. He was married in 1844 to Dr. Lydia Folger, of Nantucket, Mass., who died in 1879. She was one of the first women in the United States to receive a medical degree, and she, as well as her husband, traveled all over the country lecturing upon phrenology, and making examinations.

Prof. Fowler is survived by one brother, Dr. Edward Fowler, of New York, and two sisters, Mrs. C. Fowler Wells, of West Orange, and Mrs. Dr. Fowler Breakpear, of Birmingham, England.

Passenger Traffic.

In view of the greater facilities that are being afforded in England to passenger travel, and especially the arrangements made within the last week to run corridor trains to the north, and to give 1,000 mile tickets at reduced rates, it will perhaps interest our readers to know the numbers who travel by railway in Continental Europe. Signor Bodio, in a recent report to the Railway Tariffs Committee in Italy, gave the following detailed figures as to the mileage and number of passengers on the principal railways of Europe:

Country.	Mileage.	Number of passengers per annum.	Number of passengers per 100 of the population.
Germany.....	26,250	483,000,000	978
France.....	23,750	305,000,000	796
Great Britain and Ireland	20,625	864,000,000	2,282
Russia.....	18,100	33,000,000	33
Austria.....	9,375	85,000,000	355
Italy.....	8,750	51,000,000	171
Hungary.....	6,850	37,000,000	214
Belgium.....	2,875	87,000,000	1,426
Switzerland.....	2,185	37,000,000	1,259
Holland.....	1,875	33,000,000	726
Roumania.....	1,500	5,000,000	95

With the exception of Russia and Roumania, Italy has fewer railway passengers per head of the population than any of the other countries, and Signor Bodio adds that, while of the available seating accommodation in trains 35 per cent is occupied in France, 28 per cent in Belgium, 27½ per cent in Switzerland, 27 per cent in Hungary, and 25 per cent in Germany, only 23 per cent is occupied in Italy. There are no statistics of this matter for our own country. Better perhaps for the railway companies that it should be so.—Iron and Coal Trades Review.

THE opinion of Nikola Tesla as to the origin and nature of the Roentgen rays, as published in our issue of August 29, was from a more extended paper on the subject which originally appeared in the Electrical Review, and is, we understand, soon to be published in book form.