

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

BY HORACE C. HOVEY.

Three papers were read by Dr. G. K. Gilbert, of the United States Geological Survey, concerning Niagara, to prepare excursionists for what they were to see after the association should adjourn. The Algonquin River was the topic first discussed, as being the outlet of what is styled Lake Algonquin, and that included the upper three great lakes. Its head was where Kirtland, Ont., now is, and it followed the Trent River to Lake Ontario. The channel marking its course is from 1,000 feet to one mile in width, and from 15 to 50 feet deep. Its volume exceeded that of the Niagara. It proves that the St. Lawrence Valley was opened before the Ottawa for the escape of the glacial Lake Iroquois; that the early history of the Niagara included an epoch when it carried only the drainage of the Erie basin; and that the Algonquin River epoch is correlated with a portion of the Niagara gorge heading at the head of Wintergreen Flat.

His second paper dealt with the Whirlpool—St. David's Channel, from the Whirlpool northward to the escarpment fronting Lake Ontario. He showed that the most recent investigations tend to confirm the opinion advanced fifty years ago by Prof. James Hall and Sir Charles Lyell that this was the ancient pre-glacial channel of the Niagara. The stream had far less volume and power than at present, for it only drained the Erie watershed, and probably did not exceed what is now the American Fall. Evidence from wells in the region, from rock outcrops, and from the current of the modern river proves this.

In his third paper Dr. Gilbert gave the results of an attempt by himself and Mr. F. B. Taylor to determine the profile of the bed of the Niagara River in its gorge. Actual soundings have only been made at Lewiston and in the slack water a short distance below the Falls. These meager data were supplemented by measurements of velocity and volume, and the remaining stretches approximated by studies of the water surfaces. These computations were carried out at four places with the following results: Whirlpool Rapids, only 35 feet deep; outlet of Whirlpool, 50 feet deep; opposite Foster Flats, 35 feet deep; below that point, 70 feet deep. The configuration of the channel indicates two epochs of extreme low water in the Niagara River. It was the plan of a party of the geologists to investigate these statements personally under Dr. Gilbert's leadership. The results will be awaited with interest.

Mr. F. B. Taylor read two papers supplementary to those on Niagara in which he dealt with glacial phenomena in Michigan. Three beaches of glacial Lake Warren, known as the Leipsic, the Ridgeway and the Arkona beaches, are found to correspond with three old river channels extending westward across the "thumb" of lower Michigan to the Saginaw valley. The forest beach is the only one that passes around the so-called "thumb." The Du Plain beach is about 25 feet above the Forest beach, and appears to be the joint correlation of the Ridgeway and Arkona beaches. A series of fifteen terminal moraines extends from Cincinnati to the Straits of Mackinac, and about the same number extends northeastward from Cincinnati to western New York.

Nearly an entire day was given up to the commemoration of the sixtieth anniversary of the beginning of Prof. James Hall's connection with the geological and paleontological survey of the State of New York. The veteran scientist was present in person, having come from the Pacific coast for the express purpose of showing his appreciation of the honor thus extended to him. The section gave another afternoon to visiting Eighteen Mile Creek, a famous locality for Hamilton group fossils. Mr. Grabau had prepared the members of the section for the trip by a full résumé of the work he has been doing in that vicinity.

**ANTHROPOLOGICAL SECTION.**—Different days were set for considering the subdivisions of Archaeology, Ethnology, Psychology and General Anthropology. The meetings were admirably presided over by Miss Alice Fletcher. One of the first things done was to open a mysterious casket said to have been found under a stump three feet in diameter, sent on by Mr. Hiram J. Rich, of Wyman, Mich. The casket on being sawed open was found to contain two compartments, one with two clay balls, the other with wooden dies by which the so-called hieroglyphics were made that adorned the exterior. The find was ingenious enough to elicit remarks from Prof. F. W. Putnam, Dr. Brinton, Prof. Wright and others, the conclusion being that the casket was a fraud, and yet that the singular mounds where it was said to be found might well be worth exploration by an expert.

Next in order came resolutions in honor of the late Captain John Gregory Bourke, of the United States Army, who knew no other profession than that of arms, yet had made valuable contributions to science and literature. He was a graduate of West Point, served seventeen years on the frontier, where he developed such zeal in ethnographic studies as to warrant his being detailed for five years for special work in that

direction at Washington City. In 1893 he had charge of the rare collection in the mimic convent of La Rabida, at the World's Columbian Exposition. Under all circumstances he was courageous and faithful. It was his intention to devote himself wholly to literature and scientific pursuits. He had amassed copious notes amid his Western travels, and had made wide research amid original documents. His writings show vigor and ability. He turned public attention to the secret ceremonies of the Pueblos, and stimulated many others to pursue ethnographic studies. He was last year the vice president of this section, and also president of the American Folk-lore Society. With his untimely death we lose much valuable unpublished knowledge possessed by no other person.

Among papers of interest in this section may be mentioned one on the ancient pottery found in the Mississippi Valley by Prof. C. C. Willoughby, of Cambridge, Mass. He showed by illustration and description the development from simple circles, disks and crosses of the more complicated symbolic forms, and finally of those intricate and elegant designs found purely for decorative purposes on the antique pottery of Missouri and Arkansas.

The symbolic rocks of Newbury and Byfield, Mass., were described by Dr. H. C. Hovey. They were unlike the slate and sandstone monuments, of which thousands are to be found, being all of them of diorite, evidently from one workshop, probably located at Byfield. Besides tombstones, a set of milestones two hundred years old had recently been unearthed from amid the grass and weeds between Boston and Newbury. The ornamentation on them was pagan instead of Christian, and much of it was apparently phallic, and the wonder was that the staid old Puritans should have employed such an artist.

Prof. G. F. Wright narrated the results of experimental excavations carried on at the Lalor farm in Trenton, N. J., by Mr. Earnest Volk, under the direction of Prof. F. W. Putnam, for the American Museum of Natural History in New York. The subject has hitherto kindled controversy, but the disposition now seemed to be to accept the valuable evidence thus brought to light as to the relative age of the Trenton gravel and its paleolithic implements.

The road to the ruins of Tzac Pokama, in Guatemala, runs through an immense pine forest, and they include the foundations of what was once a populous city, with temples, palaces and other structures. These were described by Mr. J. R. Chandler. He said that every temple stood in a plaza, around which had been ranged the dwellings of the priests. Every strategic point on the mountain was once fortified by a castle, fort or pyramid. The central palace was 190 feet long, with walls 8 feet thick. On the highest point stood a fortress 240 feet long, with a pyramid 40 feet high, the whole built on terraces whence the Tzac Pokama can be seen in its entirety, as well as the hills, volcanoes, valleys and rivers for hundreds of miles around. This splendid city could have held three times as many persons as now inhabit Guatemala. Few utensils were found and no statues, sculptures or hieroglyphics. There is also a conical hill called Mumuz, with a sacrificial pyramid, through which goes a winding passage, said by tradition to lead to a rich subterranean city.

Prof. E. W. Claypole described some curious human relics from the drift of Ohio. One of them was a grooved ax of green slate, found in digging a well, and at a depth of 22 feet, in undisturbed ground, resting on boulder clay. It was deeply weathered. Another relic was a flat oval slab of slate found at the depth of 6 feet. He concluded that man was present when the glacial deposit was formed and that, in Ohio at least, glacial man was not a fiction. The only wise way seems to be to accept such facts as are verified and yet to take ample time for the formation of explanatory theories.

A paper by Prof. W. J. McGee described the stone implements of the Seri Indians, of Tiburon Island, in the Gulf of California, which are extremely simple and primitive. Their metate is simply a naturally shaped stone suitable for grinding uses, usually a waveworn pebble picked up on the beach. And so with their other tools and utensils. They represent random selection and a final form determined not by design but by selection. Such stones cannot be said to be either paleolithic or neolithic, but might be styled protolithic, and considered as anterior to the commonly recognized types of stone art, so far as accultural development is concerned.

A paper was read by Hon. Horatio Hale, of Canada, showing that the aboriginal tribes of eastern North America, especially the Iroquois and Algonquins, made use of a monetary currency, and recorded facts and events by means of a certain script. Perforated shells were in use from very early times as valued treasures and finally as money. Thus, in China, the most ancient currency was shell money strung on a string. This was superseded B. C. 2000 by copper coins known as cash. In the Micronesian Islands the shell money has been in use during the present century. It still exists along the Californian and Oregon coast. Thence it probably crossed to the Atlantic side of the continent. The use of the wampum belt is a comparatively late in-

vention, ascribed to Hiawatha, who founded the Iroquois confederacy in the fifteenth century. His name means the "wampum belt maker." Machine-made wampum came in with the whites a century after their arrival here.

Prof. F. W. Putnam, the curator of the Peabody Museum, and for many years the permanent secretary of the A. A. S., gave an exceedingly interesting report of the recent explorations carried on by Harvard University in Honduras, Guatemala and Yucatan. He dwelt particularly on the discoveries made at Coapan, where they have been working for three years, with a concession from the local government, giving them an exclusive right for seven years to come to conduct archaeological explorations.

On the whole the forty-fifth meeting of the A. A. S. in the delightful and hospitable city of Buffalo was so successful that by general consent it was agreed to return there after another decade, as had already been done for four decades past.

Death of Prof. Palmieri.

The news of the death of Prof. Luigi Palmieri, "the master of Vesuvius," will be read with profound regret by all scientists. He will be missed, not only from a scientific point of view, but from a practical one also. For forty years he lived on the volcano and knew its every mood, so that he predicted every eruption of the volcano and saved thousands of lives. Nearly every year the great meteorologist invented some new instrument which would aid him in his studies. His splendid observatory is situated at an altitude of 1,970 feet above the sea level, on a projecting ledge of rock which runs out from the foot of the crater of Vesuvius. This interesting observatory was described in the SCIENTIFIC AMERICAN SUPPLEMENT for October 24, 1885, No. 512.

Prof. Palmieri was born at Faicchio, Italy, on April 22, 1807. He studied at Cajarro and Naples and afterward started a successful scientific school. He held important positions in many institutions of learning and in 1854 was made director of the Meteorological Observatory on Vesuvius. He rapidly became celebrated by his researches and writings, and in times of eruption he heroically stuck to his post, so that in 1872 he nearly lost his life. His graphic account of this eruption is one of the classics of science. The people in the villages at the foot of the mountain fled, but he made his minute observations high on the mountain while his thermometer registered 130 degrees and the air was so surcharged with sulphur that it could hardly be breathed.

Death of Dr. Goode.

Dr. George Brown Goode, assistant secretary of the Smithsonian Institution and in charge of the National Museum, died at his home near Washington on September 6. He was born in New Albany, Indiana, in 1851. He graduated at Wesleyan University in 1870 and began his museum work in the next year at that university. In 1873 he became a member of the staff of the Smithsonian Institution. He was sent to the Centennial Exhibitions in Philadelphia in 1876 as director of the Natural History Division. He was appointed United States Commissioner to the International Fishery Exhibitions held in Berlin in 1880 and in London in 1883. He was also connected with the following exhibitions in an official capacity: The New Orleans, Cincinnati and Louisville Expositions in 1884; the Columbian Expositions, 1893; the Atlanta Exposition of 1895. He has been in charge of many of the divisions of the Smithsonian Institution where great scientific knowledge was required. He was recognized as an authority on museums and their administration. He published more than one hundred papers on ichthyology, museums and fishery economy. His death leaves a gap in the scientific circle of Washington.

Li Hung Chang at Niagara.

When his Excellency, Li Hung Chang, visited Niagara Falls on September 6 he expressed a desire to visit the power house of the Niagara Falls Power Company. His wish was gratified and he was carried into the power house in his chair. He asked many questions, pointing here and there with his ebony cane, which had been given to him by Mrs. U. S. Grant. The earl put out his cane to indicate a wheel in some part of the electric apparatus. A blue flame shot out, linking the earl to the generator through the medium of the iron shoe on the cane. An instant later the stick was jerked from his hand and it went flying over his shoulder. Fortunately his Excellency was unhurt except for a wrench his wrist had received. He went right on with his questions as if nothing had happened.

Measuring the Interior of Buildings.

A simple method of measuring heights in the interior of churches and other buildings consists in attaching a graduated string or tape to a small balloon such as is easily obtainable anywhere. This method might also be readily applied for measuring the height of caverns.—Prometheus.