

A YEAR'S DISCOVERIES.

THE ANNUAL ADDRESS BEFORE THE GEOGRAPHICAL SOCIETY.

CHIEF JUSTICE DALY REVIEWS THE WORK OF 1874—THE PHYSICAL PHENOMENA OF THE YEAR—SURVEYS AND EXPLORATIONS AT HOME AND ABROAD—REMAINS OF PRE-HISTORIC RACES AND THEIR HABITATIONS.

A meeting of the New-York Geographical Society, at the hall of the Historical Society, Second avenue and Eleventh street, was well attended. Among those present were Peter Cooper, Gen. George McCullom, Francis A. Stout, Dr. I. I. Hayes, Rev. M. Bjerring, Mr. William Rensen, and a number of others. Col. F. A. Conkling presided and introduced the President of the Society, Chief Justice Daly, who proceeded to read the annual address. The latter was profusely illustrated by stereoptican views upon a canvas screen in the rear of the stage. Among the scenes thus depicted were the cañons of the Colorado, the midnight sun off the coast of Norway, and various incidents in the Arctic experience of the Austrian Exploring Expedition.

The physical occurrences or phenomena of the past year have been atmospheric disturbances, such as typhoons, cyclones, and hurricanes, unexampled for many years in their violence and destructive effects. Great rain-falls in certain parts of the earth followed by enormous and damaging floods. The falling in certain localities of unprecedented masses of snow. Extreme cold during the past and present Winter, and earthquake and volcanic disturbances considerably distributed, but with one exception, not as violent in their character, nor as injurious in their effects, as the like phenomena in the past few years. Of these I may mention the great typhoon, which on the night and morning of the 22d and 23d of September last, swept over Hong Kong, involving the loss of more than 8,000 lives and the destruction of a vast amount of property. The cyclone in November, which passed over this country from the Gulf States to the lakes and along the Atlantic coast from Virginia to Nova Scotia, destroying half of the town of Tusculumbia, in Alabama. The storms along the New-England coast in May. The storms, tornadoes, and extraordinary rain-falls throughout the Southern and Middle States in June and July, attended by the great floods at Pittsburg and Allegheny city, by which 200 lives were lost, and by the tornadoes which destroyed the town of Tampico, in Illinois, and produced the loss of life and property in the valley of the Juniata. The hurricane in Jamaica. The disastrous storm on the coast of Nova Scotia, and the terrific gales on the coast of Great Britain and Scotland. The damage done by the rise of the Thames in March, and the destruction of plantations in April by the rise and overflow of the Mississippi. Destructive floods in India in August, and in the same month the great flood at Florida, in Spain, which swept away 200 habitations. The immense snow-fall in Persia, which extended over the whole country, accompanied by a Winter of extraordinary severity, succeeded by a Spring and Summer when the rain-fall reached the unparalleled height of twelve inches, the height before seldom exceeding two inches; which was followed by the overflow of the Tigris, and the great flood in Bagdad in which many persons were drowned, and by the floods that destroyed one-third of Shiraz and injured other towns.

The great severity of the Winter of 1874 and 1875 in the whole of Northern Asia. The falling of great masses of snow during the present Winter in the Alps, the Pyrenees, and in Spain. The unusual number of icebergs seen in the Atlantic. The hail-storm in Southern France extending over two hundred miles with a breadth of two miles, which was of great severity and caused much injury, the hail-stones being as big as marbles.

A slight eruption of Mount Etna, a continuation of the eruption of Mauna Loa, in Hawaii, the destruction by an earthquake of Antigua, and some smaller towns in Suatemola and shocks or disturbances from earthquake in Vera Cruz, St. Thomas, Ecuador, Porto Rico, Mexico, Utah, North Carolina, Scotland, Inspruck, in Switzerland; Smyrna, Constantinople, and Ceylon.

The great typhoon at Hong Kong is the most striking of these events. It was remarkable for its violence, its rapidity, and its destructiveness. Hong Kong during the past fifteen years has been visited by five most disastrous typhoons, but they all sank into insignificance before the fury of this one, which moved at the rate of forty miles an hour, being double that of the West India hurricanes.

The great rain fall in Persia is also remarkable, for Persia has been for the last few centuries a country that was constantly becoming more arid; where the supply of water was annually diminishing and where the continuation of extensive works for its preservation and distribution by irrigation has long been going on as a matter of imperative necessity.

In meteorology the progress made has been most encouraging. Predictions of approaching atmospheric disturbances, or, as they are called, "weather predictions," by scientific men, have within the last two years been so numerous and have been verified in so many instances that it may now be stated to be within the power of science to anticipate these occurrences and thereby, to a considerable extent, to guard against their effects.

The year has been distinguished by a very important event, the transit of Venus, the observations of which, though designed chiefly for astronomical purposes, are also of geographical interest, as they are made to ascertain the distance of the earth from the sun. All the results are not yet known; but the observations made are sufficient to show that the distance is less than was heretofore computed; that it is about 92,000,000 of miles.

The scientific results which have attended the voyage of her Majesty's steam-ship Challenger around the world are of the most important description. The facts revealed by deep sea soundings show that the configuration of the earth below the surface of the sea possesses the same general features as that of the land.

Mr. L. Martinet has, during the year, drawn attention to the region of the Antarctic Circle. He maintains that the general belief that the Southern Pole is the coldest is erroneous, and that certain experiments of Prof. Tyndall warrant the belief that a warmer temperature exists there. This, it may be remembered, was also claimed upon other grounds by the late Capt. Maury, in a communication addressed many years ago to this society.

In this country the most important work—the coast survey—has been continued. The Smithsonian Institute has also prosecuted successful inquiries. The labors of the United States Engineer Corps, under the command of Gen. A. A. Humphreys, have been important. The geographical work embraces the improvement of harbors and rivers, the survey of transportation, routes to the sea-board, the survey of the mouths of the Mississippi River with a view of obtaining a sufficient depth of water for the construction of a ship canal from the river to the Gulf of Mexico, or deepening its natural outlets to the Gulf, the present outlets being wholly insufficient to meet the wants of the increasing commerce of the West. Examinations for a permanent plan for the reclamation of the alluvial basin of the Mississippi River now subject to inundation; the continuation of the survey of the Northern and North-western lakes; surveys for military maps; surveys for the irrigation of some of the great valleys in California; geological reconnaissance in parts of Western Nevada and adjacent California, and geographical explorations in the great West by the various expeditions under Lieut. G. M. Wheeler, Major J. W. Barlow, Capt. W. A. Jones, Lieut. E. H. Ruffner, and Capt. W. Ludlow.

Lieut. G. M. Wheeler's survey west of the one hundredth meridian has been a continuation of the same general labors that have been prosecuted in this survey since 1863, and which during the last year have covered an area of 75,000 miles. The geological labors extended over the "Colorado plateau" region, a large portion of which is drained by the Colorado and its tributaries, and which, from its step-like table lands, its gorges and cañons, is of great interest to the geologist.

A writer in THE NEW-YORK TIMES, attached to the expedition, has given an account of interesting portions of the country in the vicinity of the cañons, and of the remains of the habitations of the races that formerly peopled it, and of interviews had with the Ute and Pueblo Indians.

The explorations of Majors Barlow and Ruffner in the Department of the Missouri, as well as Capt. Jones' surveys in the Department of the Plate, have developed much that is new in relation to the topographical, geological, and botanical nature of the territory in question. Capt. William Ludlow, who accompanied Lieut. Col. Custer's expedition for the exploration of the Black Hills, has recently published an account of that expedition, which merits general attention.

The expedition left Fort Lincoln on the 2d of last July, with the assurance by the guides that they would be opposed by a hostile force of Indians, and that they would never penetrate the fastnesses of the Black Hills; but during the whole route of nearly 1,000 miles not a hostile Indian was seen, and the Black Hills were thoroughly explored, the expedition returning to Fort Lincoln on the 30th of last August. The country first traversed resembled other portions of Dakota, an open prairie with a fair amount of grass; but wood was scarce, and water was not always to be found.

Capt. Ludlow says that the region of the Black Hills is admirably adapted for settlement; that it abounds in timber and grass; that there are flowing streams and springs of pure, cold water everywhere; that the valleys slope gently and are ready for the plow; that the soil is of wonderful fertility, as shown by the luxuriance of the grass and the profusion of flowers and of fruits; that the climate is wholly different from that of the plains, being cooler in Summer and more moderate in Winter.

This survey, under Prof. F. V. Hayden, with whom is associated Mr. J. T. Gardener, as the head of the Geographical Department, has been engaged from July to September in the mountainous region of Colorado, the accurate mapping and geological work of which has been extended over 1,600 square miles in the west and south-western portions of the Territory. The survey of this year has confirmed his discovery of 1872, that Colorado is the great centre of elevation in the United States. In the preceding year twenty-six peaks of the average height of 14,000 feet were measured, and this year twenty-four have been added to the number, making in all fifty peaks in Colorado about 14,000 feet high, the highest of which is Mount Harvard, 14,383 feet. Mount Whitney, in the Sierra Nevada, is higher—14,860 feet; but the number of great peaks in California is small as compared with Colorado. In one region, at the head of the Rio Grande and Animas Rivers, (between meridian 107° 15' and 108°, and latitude 37° 30' and 38°) which is about 35 by 40 miles, there are no less than twenty peaks of

the average height of 14,000 feet, and nearly 100 that average 13,000 feet. The sides and spurs of these great peaks are cut by hundreds of quartz veins, bearing gold and silver in large quantities, many of which, the geologist of the survey thinks, will by washing yield rich returns. South of this mountainous region the country falls off into low plateaus, through which the streams descending from the mountains have worn valleys, which were once the home of a prehistoric people, considerably advanced in civilization and the arts, but of whom nothing is known, except the ruins that have been discovered. In a canyon, never before explored, of the Rio Mancos, a branch of the St. Juan, in the extreme south-western portion of the Territory, many houses were discovered by the survey, built in the cliffs, which rise 1,000 feet above the valley of the river, most of them in ruins, but some well preserved, of which photographs were obtained with great difficulty.

Prof. Powell's report of the survey of the Colorado, and the result of Prof. Marsh's investigations in the fossil region of the West, are both of material value. The remains of the animals found during the year are all of tropical species and widely different from any now living. They were imbedded in the basin of an ancient lake of the miocene period.

Commander G. E. Bellknop, charged with ascertaining a practicable route for a telegraph cable between Japan and Puget Sound, carried on a series of deep sea soundings in that part of the Pacific Ocean, which are of the highest interest, as they confirm the great depth of the Pacific and the powerful action of submarine currents. The ocean bed along the route examined was very irregular.

The discoveries of M. Puivart, the French explorer, in Alaska, have thrown much light upon the origin of the people inhabiting that region. The conclusions that he comes to favor the idea that the Esquimaux inhabiting Alaska are of the same stock as those of Greenland and Baffin's Bay. An opposite opinion to this is furnished by Mr. William H. Dall, who has recently explored the coast of Alaska, from Cape Spencer to Mount St. Elias, and who, though a careful observer, has found nothing to indicate an Asiatic origin. Mr. Dall's report contains much further information as to the character and resources of the country.

As the society took a very active part in urging the negotiation on the part of Mr. Seward for the purchase of Alaska, and as there were many then who thought we were paying a very large sum for a useless Territory, it is gratifying to be able to state that the income now derived by the Government from this Territory, after the payment of all expenses, is greater than that from any other Territory, and will in twenty years extinguish the debt.

Prof. J. W. Putnam, of Salem, Mass., has been engaged in researches respecting the ancient inhabitants of North America, and has made some exceedingly interesting explorations of caves, mounds, fortifications, and other remains of the unknown, prehistoric people who at a remote period occupied Ohio, Indiana, and adjacent parts of the West, usually referred to as the Mound Builders. He believes that the Southern Indians were not connected with the Northern or Eastern tribes, but belonged to older inhabitants of the country, much further advanced in the arts of civilization.

Among the discoveries which have been made during the year past in the South Pacific are some of especial interest, relating to the supposed prehistoric inhabitants of the islands in the South Sea.

Mr. Thomas Croft, of Papeeti, in Tahiti, has transmitted to the California Academy of Sciences photographs of curious hieroglyphics in wood recently found in Easter Island, and which are supposed from the vague tradition current among the inhabitants of the island to represent the language of a prehistoric people of which the present inhabitants are the degenerate descendants. Mr. Croft says that none but the priests and limited few can decipher these hieroglyphics, and in another letter to the Academy, he says that he has found a native who can read them, and who is to teach him the language; that he will shortly be able to translate them, and he thinks that he has discovered the relics of a great Malayan empire that at some former period extended its power over the whole of this part of the South Pacific.

In Costa Rica and Nicaragua the explorations of Prof. William M. Gabb and Mr. T. Belt have revealed much that is new in relation to the past physical history of those regions.

In the field of Arctic discoveries the event of the year has been the return of the officers and crew of the Tegethof, of the Austrian expedition, and the important discoveries made by them. In August, 1872, the vessels Tegethof and Isbjord parted company, the Tegethof, under Lieut. Weyprecht and Payer, to attempt the passage around Cape Tscheljuskin, and to the northern coast of Asia, to Behring Straits. Here the latter was frozen into an ice-doe, and compelled to drift for fourteen months in that dangerous position. During the long Polar Winter of six months the cold was so intense that the mercury remained frozen for weeks.

In March Lieut. Payer set out on a sledge expedition to explore the new land, but little could be done, for the cold was still intense, every article of clothing was frozen like metal, and a strong rum lost all its potency and fluidity. A similar expedition, however, was undertaken on the 24th of March, and was more successful. The land, to which they gave the name of the Austrian Emperor, Franz Joseph Land, is about the size of Spitzbergen.

On the 20th of May they had to abandon the vessel for the return journey, which lasted over three months, the trials and hardships of which were exceedingly great.

The peculiar geographical circumstance in this expedition is, that in other attempts to reach the pole, where vessels have been caught in the ice and drifted, the drift has usually been to the southward; but in this case the Tegethof drifted northward to the place where she was finally frozen in and abandoned.

The results of this expedition are generally accepted as bearing against the theory of an open Polar Sea. The Germans have also determined to send an expedition in the same direction at a cost of \$300,000, to start, if possible, next June.

The results, geographical and scientific, of the voyage of the *Polaris* are not yet fully worked out, but so far have been enumerated as follows: The vessel reached 82° 16' north, the highest latitude ever attained by a vessel. The navigability of Kennedy Channel was proved. Seven hundred miles of coast line were discovered and surveyed. The probability was strengthened that Greenland is an island, having been separated from the continent in a north direction, and a very great number of scientific observations were made embracing a large range of subjects, such as ocean physics, the force of gravity, astronomy, magnetism, meteorology, and natural history, which would alone justify the sending out of the expedition. The magnetic observations are said to be more complete than any other before made in the Arctic.

In Europe the Governmental surveys heretofore commenced have been continued, and the long projected measurement of an arc of the meridian was begun last Autumn.

That the remains of the ancient city unearthed by Dr. Schlieman is Troy is still contested. Those who dispute it, however, see scholars who have never examined the locality, while on the other hand M. Emile Burnouf, one of the few scholars who are really authorities in such an inquiry, has at Dr. Schlieman's request examined his collection, and in an article in the *Revue des Deux Mondes*, evidently inclines to the opinion that it is really the ancient city of Priam that has been discovered.

The recent excavations in Pompeii show that what has been revealed after the course of so many years, is after all but a small part of the city, and this is not only now indicated, but every extension adds new objects, and some of the deepest interest.

The excavations that are now going on in Rome are bringing to light numerous quantities of objects especially on the Esquiline, relating to nearly everything connected with both the public and private life of the Romans.

An ancient Egyptian medical treatise has been discovered by Prof. Ebers, of Leipsic, which, by a calendar on the back of the papyrus, discloses that it was written 1600 years before Christ. It is a handbook of Egyptian medical science at that time, and a complete book from beginning to end.

In Asia, the geographical explorations and researches have, during the year, been numerous and widely distributed. The Sea of Aral has been surveyed by the Russians, and found to be 165 feet above the level of the ocean, and 250 feet above the Caspian. They have explored in a steamer the eastern branch of the River Oxus, from its mouth in the Sea of Aral, for 200 miles.

The great surveys in India have been actively prosecuted during the year, and it is now computed that a survey of the whole of India will be accomplished within ten years. Gen. Cunningham, of the Archaeological Survey, has explored the central provinces, and made discoveries of great importance among Buddhist remains at Bharabut, a place 120 miles south-west, of Allahabad. It is the site of an ancient city, supposed to be one mentioned by Ptolemy, which sixty years ago was buried in dense jungle.

Lieut. Conder, R. E., has made important discoveries of ruins in the hill country of Judah, which he thinks he can identify with some of the lost Biblical cities. He has found boundary stones which may prove to be the ancient Levitical landmarks. Mr. Henry Maudslay has also made recent discoveries upon Mount Zion. Lieut. Conder says that the whole of Palestine will be surveyed within four years; that 300 square miles are now added to the map, being five times as much as was at first expected to be accomplished.

The discoveries of Lieut. Cameron, the commander of the Livingston Relief Expedition, were then referred to at length. The researches of Dr. Nachtigall in the region between Bornou and the Nile, in Upper Egypt, were also alluded to, particularly that portion of his report relating to the slave trade. In referring to recent discoveries in Australasia, the speaker gave a short account of the life and impostures of George Psalmanzer, who flourished in London at the beginning of the eighteenth century, and succeeded in palming himself off on the learned of that day as a native of the Island of Formosa. The recent discoveries in this quarter of the globe were then briefly summarized, after which the Judge closed his address.