THE TRANSIT OF VENUS
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UNITED STATES OBSERVING EXPEDITIONS.

A SLOOP-OF-WAR TO CONVEY THE ASTRONOMERS—VARIOUS POINTS FROM WHICH THE TRANSIT WILL BE OBSERVED BY AMERICAN SCIENTISTS—PROPOSED EXPLORATIONS.

The most important expedition that has ever been sent out by the United States is nearly ready to start, its object being the observation of the transit of Venus, which occurs on the 8th of December next. The last observations of the transit of Venus were made on the 3d of June, 1769, and by these observations the distance of the sun from the earth was first determined. One observation was made in the north of Lapland, the other in Otaheite, in the Pacific Ocean. The expedition to Otaheite was commanded by the celebrated Capt. Cook, and the entire expense was defrayed out of the private purse of George III. The accurate determination of the distance of the sun from the earth is of the greatest importance, because every astronomical measurement depends upon that as a basis of calculation. From the researches and investigations of astronomers and scientists it has been made certain that the estimated measurement of the distance of the sun from the earth, that is 95,500,000 miles, is not correct, and that calculations which have been made upon that basis are inaccurate. An error of 3,000,000 of miles is believed to exist, and this error is thought to be due to a mistake in the observations made in North Lapland. This has caused astronomers and scientists of all nations to look forward to the next transit of Venus as the opportunity to determine accurately the sun's distance from the earth. There are two transits of Venus, with an interval of eight years, and then the phenomenon does not occur until after a lapse of 105 years. A curious fact, too, is that these transits alternate—that is, both of the last transits occurred in June; those near at hand will be in December, and the next, after 105 years, from 1882 will be in June again. The observations of astronomers, and their debates upon the coming transits, led the Astronomer Royal of England to believe that the transit of 1874 would not be as favorable for the observations and calculations that were to be deduced as the one in 1882. Consequently no preparations were made until quite recently, when it has been proved that the transit of 1874 will be far more favorable for the application of the proposed method of calculation than that of 1882. When this was made certain England, France, Germany, and the United States determined at once to take the necessary steps to pursue the investigation in December next, and afterward their observations are to be compared for the benefit of the science of the entire world.

The United States Government appointed a commission of scientists to observe the transit at such places and from such points as might be deemed best. They have decided to send out an expedition to the Southern Indian Ocean, and others to extreme points in the northern hemisphere. At a meeting in Washington on the 23d inst., in the National Academy of Design, Prof. Newcomb, of the Naval Observatory, a member of the Commission on the Observation of the Transit of Venus, detailed the work already completed by the Commission, and the plans decided upon for the observations in December next. Eight parties are to be sent out from the United States, and, as above noted, arrangements have been completed to compare and exchange their results with the experiences and observations of the German, French, Russian, and English expeditions. Three of the parties are to be established in the northern, and five in the southern hemisphere. The observations in the northern hemisphere are to be made at Wladwotok, in Siberia, under charge of Prof. Hall, of the navy. Another party will proceed to Asia, and there they will divide. One party, under Prof. Davidson, of the Coast Survey, is to make its observations at Nagasaki, Japan. The other, under Prof. Watson, of Ann Arbor, Mich., will proceed to Pekin, China, and there make their observations of the transit. The corps who are to observe the transit of Venus in the southern hemisphere are to sail from New-York in the United States sloop-of-war Swatara.

This vessel has been docked at the Brooklyn Navy-yard, and is being thoroughly prepared for the long voyage she is to make. Her upper decks have been entirely rebuilt, and her guns taken ashore. On the upper, or spar deck, eight large state-rooms have been built for the accommodation of the scientific gentlemen of the expedition. The after part on each side of the stern has been built out, making two large windows, and enlarging the Captain's room materially. Below, on the next deck, a ward-room pantry has been built under the Captain's room, and six fine large state-rooms have been built on each side of the ward-room for the accommodation of the Swatara's officers. A partition has been run across the vessel, dividing the ward-room from the steerage. On each side of the steerage five state-rooms have been built for the use of the petty officers of the vessel. Still further forward is the berth-deck, where the men are to sling their hammocks, and quarter. Below this deck are the engines, which are new and compound acting. The boilers are new and are fitted with all the modern appliances and improvements. Below, also, are to be stored the supplies of all kinds, coal, and the magazine. The Swatara is about 200 feet long, and has about 40 feet breadth of beam. She is ship-rigged, and can cruise about, making good time, without the aid of steam. She is to have but one gun for defense, a 60-pound Parrott, which will be mounted upon the forecastle. She is to be provided with a carronade for purposes of salute, but her usual armament is not taken on board, to give more room to the members of the expedition. Yesterday the painters, riggers, and other workmen were busy at work, hurrying forward the preparations for her immediate departure. It is expected that the Swatara will go into commission on the 4th or 5th of May next, and she will depart as soon as possible afterward. Capt. Chandler, who is to command the Swatara, arrived in the Navy-yard recently from Washington. There he had a long conference with the Government authorities and the officers of the navy, and his plans are fully completed. He has detailed the following officers for the Swatara on this expedition: Lieut. Commander Charles J. Barclay, Executive Officer; Lieut. G. F. Wilkins, Navigator; Lieuts. C. H. Stockton, Wm. McLittle, John J. Hunker, and J. E. Pillsbury, Watch Officers; Surgeon, Edward Kershner; Passed Assistant Paymaster, George W. Long; Chief Engineer, Thomas J. Jones; Passed Assistant Engineers, J. Brown and J. W. Gardner; Acting Boatswain, Thomas W. Brown.

After the Swatara sails from New-York she will proceed first to Rio Janeiro, and making a short stay there will cross to Cape Town. At Cape Town the last preparations for the comfort of the expedition will be made, and stores will be taken on board to last until the vessel reaches New-Zealand. From Cape Town the Swatara will proceed to a group of islands called Crozet's Islands. There a party of observers under Capt. Raymond, of the Army Engineer Corps, are to be landed, and the Swatara will return for them on her home voyage. The largest of these islands was first discovered by Capt. Crozet in 1772. He communicated the fact of his discovery to Capt. Cook, who visited them in 1775. He found that the group consisted of four islands, the largest of which he named Prince Edward, and the two next in size he called Marion and Crozet, after two French navigators, who had previously visited them. The eastern island of the group called East Island, is located by Sir James Ross in latitude 46° 27′ south, longitude 52° 14′ east. These islands are rugged, mountainous, and utterly barren. The most remarkable phenomena about these islands is the terrible surf, which Capt. Chandler says breaks so fiercely upon the rugged, precipitous shore that he may be compelled to wait three or four weeks before he can effect a landing of the expedition who are to observe the transit there. After landing the party upon Crozet's Islands, the Swatara will proceed to Kerguelen's Land, or Desolation Island. There another party of scientists are to be landed under Lieut. Commander Ryan, United States Navy. The south point of Kerguelen's Land, Cape Saint George, is in latitude 49° 54′ south, longitude 70° 10′ east. It was discovered by Kerguelen, a French navigator, about the year 1712, but was not explored until the third voyage of Capt. Cook around the world. Capt. Cook had heard of Kerguelen's discovery, and sailed from Table Bay to verify it, and, if possible, to explore the island or ascertain whether, as he suspected, it was a part of a southern or Antarctic continent. He reached Kerguelen's Land about the 24th of December, 1775, and at once recognized it from the description which had previously been given him by Capt. Crozet. He searched for a harbor and on Christmas Day found a small land-locked inlet, which he named Christmas Harbor in honor of the day. From a distance he had been led to believe that the island might be thickly covered with trees and vegetation. But when he went on shore he could not find even a shrub. What he had supposed to be trees and vegetation proved to be only a sickly spreading kind of lichen and moss. The only animals he could find were a kind of ursine seal. But birds covered the whole island in large flocks, and there were immense numbers of penguins. Some navigators have called this island "the Rendezvous," because they found such an abundance of wild fowl. These kinds evidently gather on this barren island for the purpose of depositing their eggs. After thoroughly exploring the entire island the naturalist of the party could find only sixteen varieties of plants, most of which were mosses, lichens, and a species of sage brush. Capt. Cook circumnavigated the island, and found it to be about 100 miles long, and about fifty miles wide at its broadest part. Kerguelen's Land or the Island of Desolation has been visited but seldom since Capt. Cook's time, and nothing more has been learned of its barren surface except that a few years ago a navigator explored the rock for precious metals, but was unsuccessful in his search. He found a blue, hard, flinty rock, and nowhere were there any signs of valuable or useful minerals. There is ample field, however, for Lieutenant Commander Ryan and his party, who will doubtless make many interesting discoveries about this almost unknown land. From the Island of Desolation, Capt. Chandler is to proceed to New-Zealand, by way of Sidney. At Tasmania he will leave a party under Lieut. Peters, United States Navy, to make observations of the transit and other scientific explorations. From Tasmania the Swatara will go to the Chatham Islands in the Southern Indian Ocean, and there Capt. Chandler will land another party, under Prof. Smith, of the Coast Survey.

The reason for selecting so many places of observation is the uncertainty of the climate in the Southern Antarctic region. The importance of making correct and thorough observations of this transit of Venus can hardly be exaggerated, and every precaution that human foresight can suggest is to be taken to secure the greatest possible success. While these observations are being made at the different stations, Capt. Chandler is to take the Swatara and sail to a group of islands hitherto unexplored, which are situated about 300 miles south-east of New-Zealand. This exploration is to be the work of the rest of the expedition during the observation of the transit of Venus. After the exploration has been finished, the Swatara will return and take on board the parties who have been left at the different stations. Whatever specimens they may have collected will be taken on board and carefully preserved. The parties left at Sidney are to return to the United States at their own pleasure, by steamer, as the Swatara will not return to that port for them. After all the other parties have been taken on board, the Swatara is to proceed to an island in the Japan Sea, hitherto almost unknown, and thoroughly explore every part of it. Another great object throughout the voyage of the Swatara is to make careful observations of the variations in the compass. Capt. Cook, in his narrative of all his voyages, says that he noticed frequent variations of a point and more that were believed to be due to polar influences. After the exploration of the island in the Japan Sea, the Swatara will turn homeward. She will sail to Aden, and passing through the Suez Canal, will call at several of the Mediterranean ports. Thence passing Gibralter she will proceed across the Atlantic to New-York. Capt. Chandler expects that the entire voyage will consume about fourteen months.

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