COMMANDER PEARY'S DISCOVERY OF THE NORTH POLE.

The amazing coincidence of the report by two independent explorers of their location of the North Pole within a year of each other, after the hardship, privation, and expense of life and funds endured in vain in the effort to find it for over three hundred years, makes any comparison of the probability of the reports or the value of the results obtained difficult if not unprofitable with the limited particulars hitherto available.

We prefer, therefore, to await the verdict of the investigation, which will undoubtedly be made by the highest scientific authorities upon presentation of the complete evidence on either side; and expressing no opinion, briefly to summarize Mr. Peary's report of his achievement as we did that of Mr. Cook.

The origin and early history of polar exploration was sufficiently outlined in last week's SCIENTIFIC AMERICAN, which also compared the reported achievement of Cook with the earlier work of Peary. After the latter's expedition of 1906, when he reached 87 deg. 6 min. N. lat., then the "farthest north," he determined to make one more effort to reach the Pole, and the "Roosevelt" was accordingly equipped by the Peary Arctic Club with all the material and scientific instruments which have been proved to be most essential in polar exploration by Commander Peary's twenty-three years of experience.

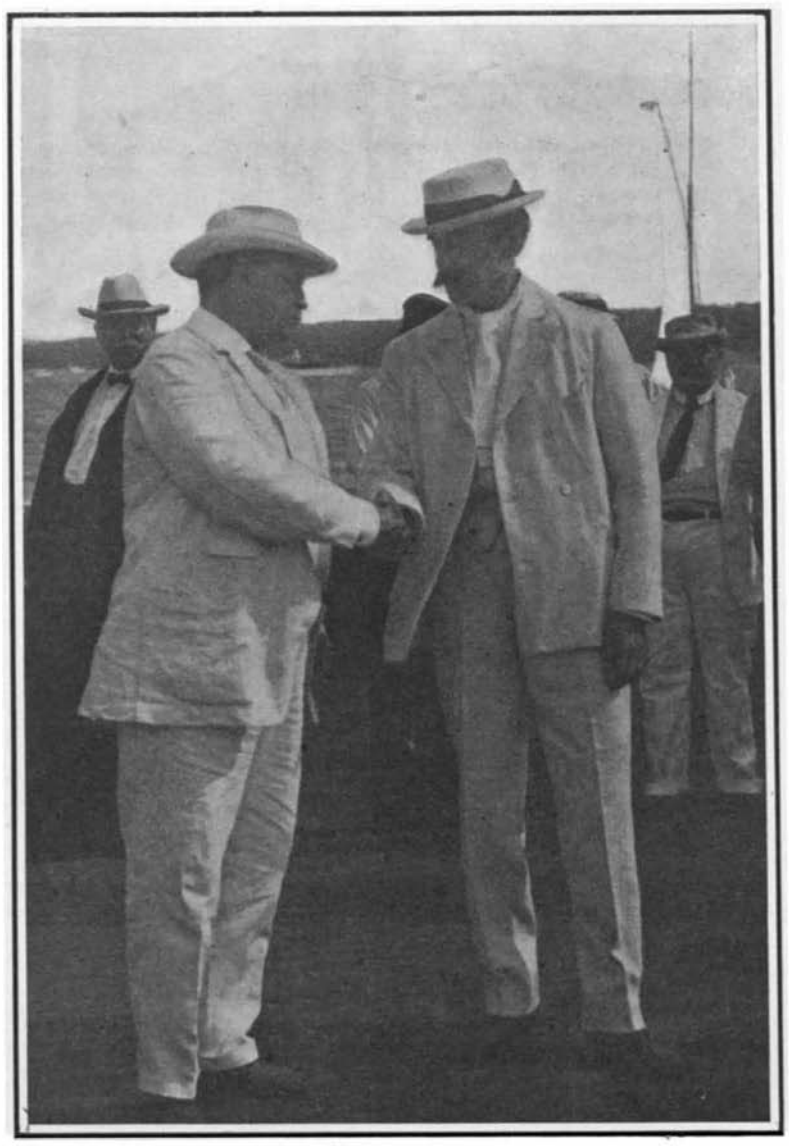
The "Roosevelt," with Peary and his party on board. left New York on July 6th, 1908, called at Sydney, near Cape Breton, Nova Scotia, leaving there July 17th, and proceeded east round Newfoundland and then straight north through Davis Strait and Baffin's Bay to Cape York, Greenland, at the southern end of Smith Sound. Leaving there August 1st, the ship proceeded *via* Etah, farther up the sound, navigating laboriously through floating ice, often densely packed, to Cape Sheridan in Grant Land, the northern end of Ellesmere Land, on the other side of the sound, arriving there September 1st, and there the expedition passed the winter. The farther progress of the explorers has been reported by Commander Peary exclusively to the New York Times, by whose courtesy we are permitted to give the following abstract.

Peary's full report describes greater difficulty in making the point selected for winter quarters than was at first suggested. An actual landing at Cape Sheridan was not made until several days after arrival there, strong northeasterly winds and the drift of the ice repeatedly forcing the ship back and twice driving her aground, and it was only on September 5th, after zigzagging through leads in the ice for several days, that the "Roosevelt" succeeded in rounding Cape Sheridan into open water, and lying up in an opening in the floe at the mouth of the Sheridan River.

Supplies and equipment were immediately transferred across the ice to a clapboard house and storeroom hastily built on shore, and on September 15th the work of transporting supplies was begun, several sledge expeditions depositing provisions at various points along the coast from Cape Sheridan to Cape Columbia, so that the sledge party on its spring dash for the Pole might travel as light as possible and pick them up *en route*. This work was carried on continuously until November 5th, and was mingled and followed by hunting expeditions, tidal and other observations by various parties, lasting until February.

The sledge expedition for the Pole left the "Roosevelt" in three divisions on February 15th, 21st, and 22nd under Capt. Bartlett, Prof. Marvin, and Com. Peary respectively, the total of all divisions being 7 whites and 59 Esquimaux, with 23 sledges drawn by 140 dogs.

All of the divisions appear to have assembled at Cape Columbia, such of the supplies as were required being brought up from the other depots on the route, the dogs rested, and the equipment thoroughly overhauled by February 27th. In the meantime, apparently, Bartlett's pioneer division had been hewing a way north through jagged ice to the "big lead," a stream of open water, which he crossed on the first of March and got away north over the ice, the remainder of the party following soon after, but being stopped on their second day's march by open water formed by a breach of the ice by strong wind after Bartlett's division had passed the spot. Two sledges were smashed beyond repair in the first march, the teams going back to Cape Columbia for reserve sledges. At the end of the fourth



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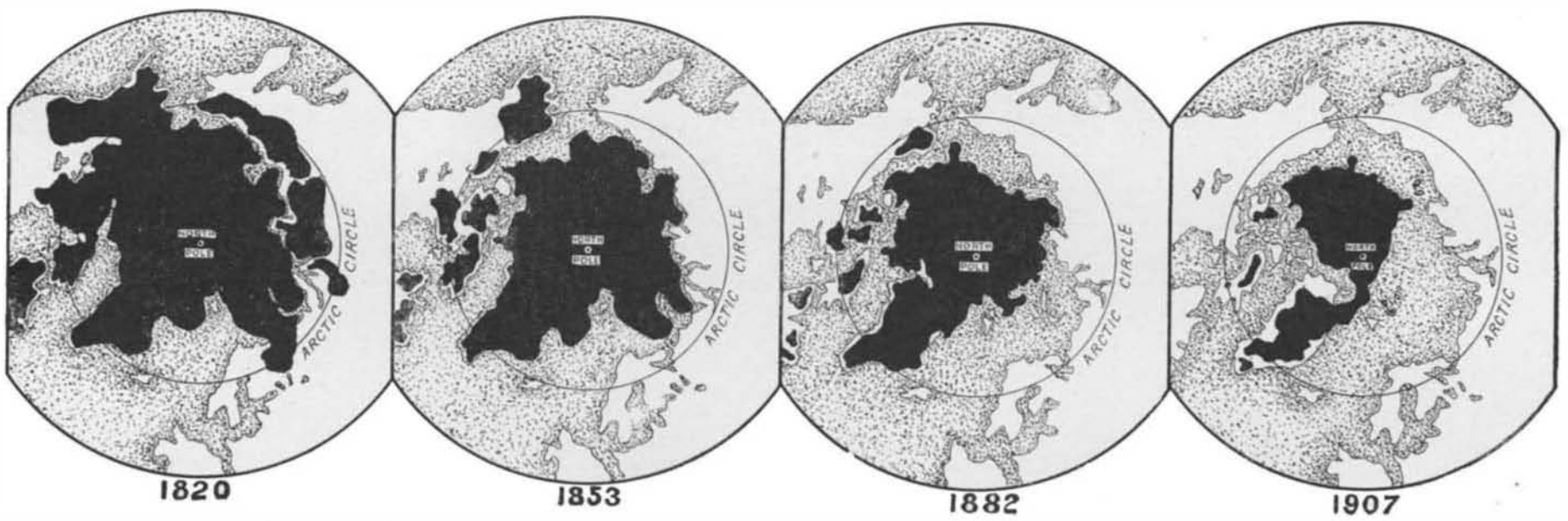
Ex-President Roosevelt bidding Commander Peary God-speed on his successful polar expedition.



Four stages in Arctic discovery. The black areas indicate the unexplored portions in the respective years.

Photographs by Underwood and Underwood.

Dr. Cook in conversation with Etah Esquimaux. Some of these tribesmen accompanied him on his successful expedition.

Mr. Thiegaard Jansen, Danish inspector of North Greenland, the first to receive the news of Cook's success. He is the man with the white cap.

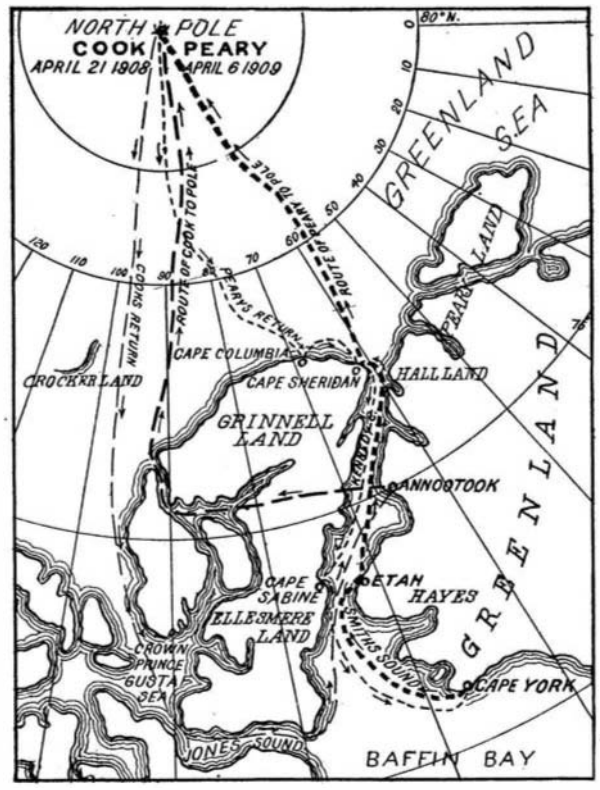
SCENES ON THE COOK AND PEARY EXPEDITIONS.

day the rest of the expedition caught up Bartlett, who had been stopped by open water, which delayed the entire party till March 11th.

On the 5th of March the sun appeared for a few minutes at noon for the first time after the long winter night. On March 11th the lead was sufficiently frozen over to be crossed, and another start was made. Borup and Marvin, who had gone back for alcohol and oil from Bartlett's third camp, had not yet come up with the expedition in spite of the delay, causing some anxiety, but a note was left for them, and three days later they caught up the main party at the end of its sixth march. The latter in the meantime had been traversing alternately floating solid ice and newly-frozen leads, and had just crossed the 84th parallel. From that camp Dr. Goodsell turned back by prearrangement, and McMillan accompanied him reluctantly, owing to a badly-frozen foot, which he had been concealing for three days, much to the regret of Peary, who had counted on his enthusiasm and physical powers.

The best dogs and sledges were selected for the northward journey, the party now consisting of 16 men, 12 sledges, and 100 dogs. At the end of the tenth march, at latitude 85 deg. 23 min., Borup turned back in charge of the second supporting party. The traveling rather improved, and Commander Peary and Marvin waited twenty hours after the start of the advance party, in order to overtake them as they broke camp after the next halt, thus using the same camp and keeping in touch with the advance party once in every twenty-four hours. After two more marches the sun began to get high enough for observations to be made, 85 deg. 48 min. being recorded, and, the going continuing to improve, 50 minutes was covered in the next three marches, including 20 miles on the third day, bringing the party to 86 deg. 38 min. At this point Marvin turned back with the third supporting party. The next day's march was good, but after that came the deepest snow encountered, accompanied by haze which made a short and exhausting journey. At the end of the succeeding day the ice parted exactly where the party was encamped, nearly causing the loss of dogs and sledges, but after an exciting period dashing from one moving floe to another, better going was reached. Then came Capt. Bartlett's last day, another long march with fair going, camp being made at 87 deg. 48 min., as shown by observation of the sun next day. The sturdy navigator of the "Roosevelt," who had borne the brunt of the pioneering work, walked several miles north in the morning to be sure that he crossed the 88th parallel, and then turned reluctantly back with the two Esquimaux of the last supporting party, the provisions carried being insufficient to last more than 6 men and 40 dogs for the week or more estimated to be required to reach the Pole as well as for the return journey.

Peary then determined to try and reach the Pole in five forced marches, allowing less than a day for each, extending the last one, if necessary, to complete the distance lacking. His cabled narrative speaks of "five marches of fifteen miles each"; but as he was then south of the 88th parallel, this is an obvious mistake for 25 miles, to which distance he refers as having accomplished his intention on his next, the twenty-first, march. After a few hours' sleep good going was found, and twenty miles were covered on the twenty-second march before an open lead delayed the journey. Another brief



Map showing the routes taken by Peary and Cook on their expeditions.

halt and even better weather and smoother ice enabled another twenty miles to be made on the next march, including a dash across 100 yards of ice newly formed over a lead, which buckled under the sledges and broke as the last one left it. Again a short sleep, and twenty-five miles were made on the twenty-fourth march. Although the temperature was not so low as had been experienced, even the Esquimaux complained of the bitter cold. Much-needed sleep was taken for a little longer, and then the party dashed forward, dreading that each rise in the ice marked an open lead, but always finding continued going. The haze was thicker, but an observation was possible at noon, showing 89 deg. 25 m. A rise in temperature to 15 deg. below zero encouraged the dogs, and forty miles was covered in twelve hours. An observation at noon on April 6th, at the end of the twenty-sixth march, showed latitude 89 deg. 57 m. to have been reached, only three minutes or a little over three miles from the Pole, so the remaining distance was apparently covered before a rest was taken.

The first thirty hours at the Pole was spent in making observations and taking photographs. Ten hours after arrival the weather cleared, and the afternoon of April 7th was cloudless. A crack in the ice five miles from the Pole was found, and a sounding was made, 1,500 fathoms of wire finding no bottom, and the wire being broken and lost in withdrawing it.

Speed was just as urgent on the return as on the upward journey, every day gained lessening the chance of a gale opening leads and destroying the track. Every march back lessened the chance of provisions running short before the base was reached, so the equipment could be lightened to facilitate speed. Peary therefore determined, in spite of the records for Arctic travel made on the advance, to try to *double* the daily journey on the return, covering two of the northward marches on each march south, and making use of the same "igloos"—the ice huts made in camping—and so saving time at each halt. This he very nearly accomplished, regularly covering five outward marches in each three of the return journey. He was singularly fortunate in escaping open leads in the ice, which had delayed the return of the supporting parties, down to lat. 85 deg. 23 m., the camp at the end of the tenth outward march, where a lead five miles wide was encountered. By good luck Bartlett's trail was found again at the other side, and by continued rapid traveling Cape Columbia was reached on the 23rd of April after fifteen marches. The "Roosevelt" was reached in two more marches, and found unharmed. Nearly two months were spent in additional geodetic observations and in bringing back remaining supplies from the outlying *caches* until on July 18th the ice was sufficiently open for the ship to be removed from her berth. She fought her way south to Cape Sabine by August 8th, picked up Whitney and the stores at Etah, coaled from the "Jeanie," and cleared from Cape York August 26th, and reached Indian Harbor September 5th to send the now historic telegram: "Stars and Stripes nailed to North Pole."

How the sextant is manipulated in measuring the sun's altitude.

HOW COOK MADE HIS LATITUDE OBSERVATIONS.

So much doubt seems to have been engendered in the public mind by a certain portion of the press, regarding the validity of Dr. Cook's observations, that it may not be amiss to describe briefly the methods which, in common with every other explorer, he would necessarily adopt in determining his latitude. The actual determination of latitude, although it is one of the most important practical questions in astronomy, is also one of the most elementary, for which reason we fail to understand why so much ado should have been made.

For the purposes of astronomical measurement, the celestial sphere is divided as indicated in Fig. 1. Assuming that the observer is placed at *O*, his celestial horizon will be *H E S W*. The axis of the heavens will be *P p*, *P* being the elevated pole, and *p* the depressed pole; *Z* will be the zenith of the observer, and *N* his

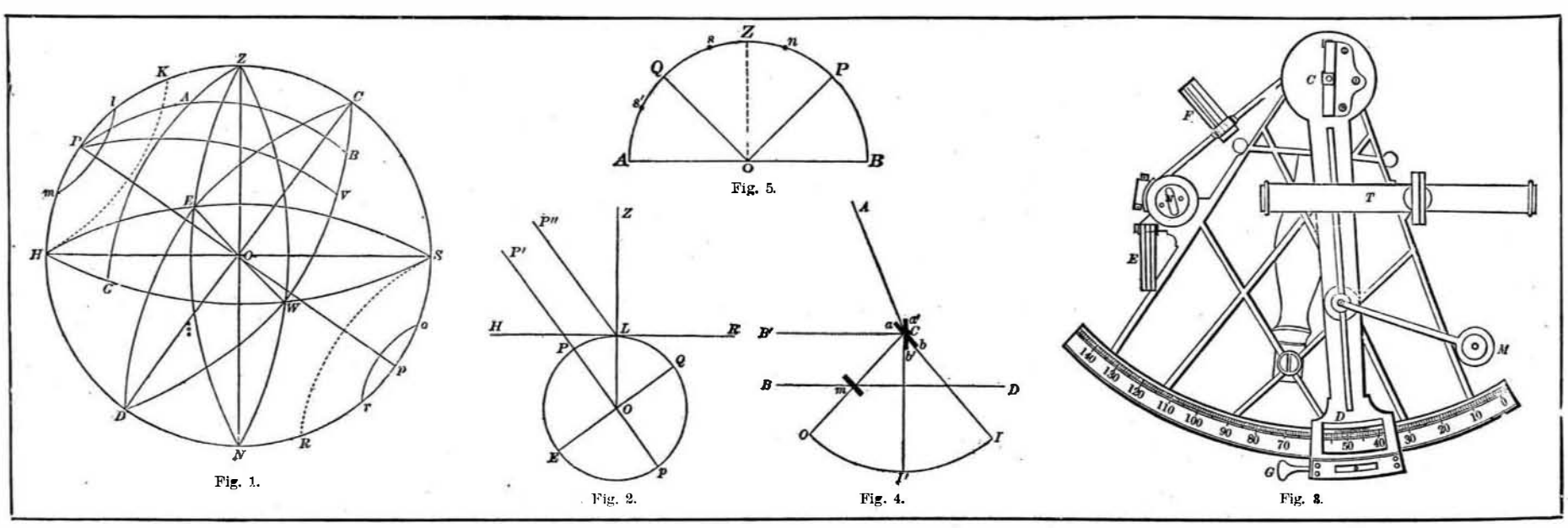


Diagram showing the principle of the sextant and the manner of its use in determining the altitudes of celestial bodies.

HOW COOK MADE HIS LATITUDE OBSERVATIONS.