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WILLIAM JOHN PETERS, 1863-1942

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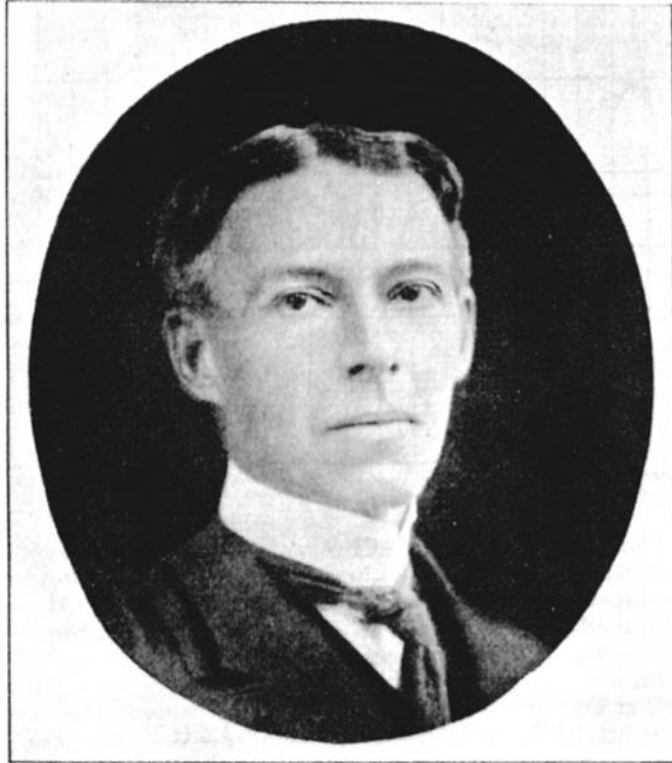
During the first two decades of the existence of the Department of Terrestrial Magnetism of the Carnegie Institution of Washington, emphasis was placed on the acquisition of observational data in order that a firm foundation for future theoretical studies of the Earth's magnetism might be laid. To this end numerous expeditions were sent to all parts of the world to determine the magnetic elements at stations on land and a large amount of observational material was thus accumulated. At the same time the cruises of the *Galilee* and *Carnegie* were furnishing the magnetic data at sea to supplement the results on land. Aside from important theoretical considerations, the contribution of these data over the oceans to the correction of errors in existing magnetic charts was of inestimable value to navigation as was attested by the keen interest manifested by the maritime nations to whose hydrographic bureaus the results were promptly supplied.

So ambitious a project as the magnetic survey of all the oceans had never been undertaken before and the enterprise was consequently to a large extent of a pioneer character. Questions as to what work should first be undertaken, how it could best be accomplished, and especially the many problems regarding vessels and instrumental equipment, had to be settled. The man who perhaps contributed most, both in the experimental work, design and improvement of instruments, and in the actual execution of the programs at sea during the early formative stages, was Captain William John Peters.

Captain Peters' extensive training and experience before he entered the Department of Terrestrial Magnetism admirably fitted him for this important work. Born in Oakland, California, February 5, 1863, he was educated in the public schools of his native city and entered in 1880 the University of California, taking courses in chemistry and botany in the Pharmaceutical Branch in San Francisco. In 1881, he was appointed an assistant observer and computer on official boundary-surveys between two of the western States. In this capacity he became proficient in methods of determining latitude and longitude by means of the zenith-telescope and transit-instruments.

On July 23, 1884, while engaged in studying astronomical and geodetic subjects in Washington, D. C., he was appointed assistant topographer in the United States Geological Survey and on July 1,

[PLATE 1]



William Peters

1863-1942

1887, was advanced to the position of topographer. He was later promoted through various grades until 1898. His appointment in the Survey was from a list furnished after the first competitive examination for candidates.

During his period of service in the Geological Survey, he performed much strenuous topographical and geodetic work in the western States, particularly in California, Iowa, the Dakotas, Kansas, and Nebraska. From 1895 to 1898 he was in charge of a standard-line party in Indian Territory and also did triangulation-work in New York State. In the years 1898-1901, he carried out, as chief of party, an extremely difficult and important exploratory program in Alaska. His last assignment in the service of the Geological Survey was the execution of detailed surveys in Utah and Alaska in 1902.

After the return of the unsuccessful Baldwin-Ziegler Polar Expedition in 1902, Mr. Ziegler organized his second polar expedition (1903-05). For this Expedition, Peters was selected as second in command in charge of all the scientific work and as the representative of the National Geographic Society, which collaborated in the enterprise. The lack of success from the viewpoint of polar attainment, was compensated by the importance of the scientific data which, thanks to the unflagging energy and inspiring example of Captain Peters, were obtained under most trying circumstances. After penetrating the Arctic Sea to a point in latitude 82° north, the Expedition's vessel *America* returned to Teplitz Bay in northern Franz Josef Land. Here, from the month of October 1903, she was exposed to furious gales and terrific ice-pressures which she withstood until January 23, 1904, when she was lost in a frightful hurricane. During this severe winter, Captain Peters secured a series of magnetic observations covering the period September 28, 1903, to July 1, 1904. The instruments were then packed and transported to Cape Flora to await the arrival of the relief ship. Although attempts were made by the relief party to reach Cape Flora in the summer of 1904, it was not possible, on account of the ice-conditions, to rescue the men until the end of July 1905. The magnetic results secured by Captain Peters were reduced and published along with the other valuable scientific data obtained under his direction, by the National Geographic Society in 1907. They constitute an extremely important contribution to our meager knowledge of the geophysical conditions of Franz Josef Land.

These experiences proved an excellent preparation for the important work in which Captain Peters was soon to be engaged. On January 5, 1906, he was chosen as chief magnetic observer and commander of the survey-vessel *Galilee* of the Department of Terrestrial Magnetism of the Carnegie Institution of Washington. Cruises II and III of this vessel were made in the Pacific Ocean, their combined length totaling about 53,263 nautical miles. During these cruises Captain Peters made a careful study of the instrumental equipment and particularly of apparatus for measuring the magnetic declination at sea and his experiments, made as opportunity afforded, especially on the third and last cruise of the *Galilee*, resulted in his invention of the "marine collimating-compass" which became the principal instrument for declination-determinations on the *Carnegie*.

At the conclusion of the third cruise of the *Galilee*, it was apparent

that it would be more economical to build a non-magnetic vessel than to defray the expense involved in the satisfactory determination and elimination of the ship's disturbing effects. It was decided, therefore, to build the non-magnetic yacht *Carnegie* and Captain Peters, because of his intimate knowledge of the requirements derived from his practical experience on the *Galilee*, was chosen as the Department's representative to be present during its construction and to insure that no unsuitable magnetic material should be used in the vessel.

The command of the *Carnegie* on her first two cruises 1909-13 was intrusted to Captain Peters. The maiden cruise was comparatively short, its length being 9,600 nautical miles, and was confined to the Atlantic Ocean. While lying in port at Falmouth, England, several eminent persons visited the vessel and their comments reflect much credit on her captain.

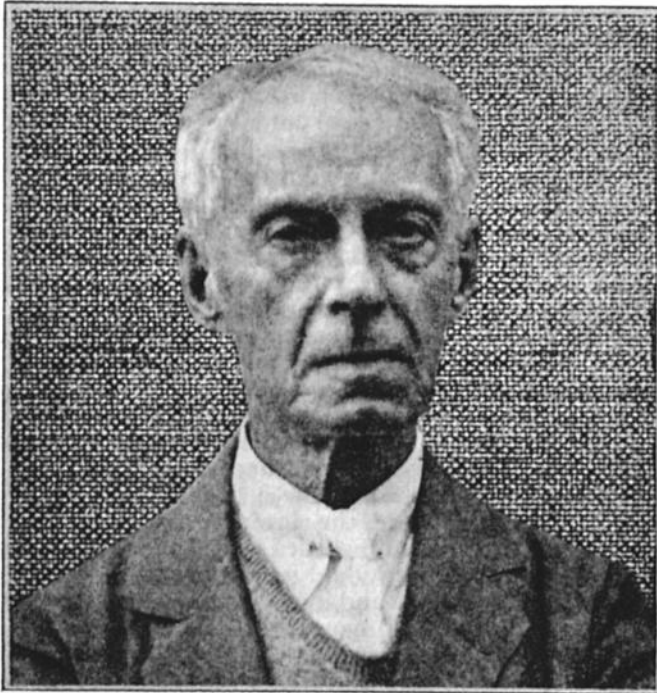
The second cruise which started from Brooklyn, New York, June 20, 1910, was a three-year circumnavigation voyage chiefly in the Atlantic, Pacific, and Indian oceans, the total length of which was 92,829 nautical miles. On this cruise chart-errors of great importance to navigators were found; these were promptly communicated to interested hydrographic establishments. The detailed results of Cruises I and II of the *Carnegie*, as well as those obtained on the *Galilee*, are published in *Researches of the Department of Terrestrial Magnetism* [Carnegie Institution Pub. No. 175, 3 (1917)].

In 1914, Captain Peters was placed in charge of an expedition organized by the Department of Terrestrial Magnetism to secure observations along the coast of Labrador and the shores of Hudson Bay and Hudson Strait. For this purpose a three-masted schooner, *George B. Cluett*, was chartered from the International Grenfell Association for three months. Unusual difficulties were encountered both on land and sea as well as in computational work aboard the vessel because of the exceptionally strong winds and low temperatures. The ice-conditions were also extraordinarily unfavorable. However, in spite of these difficulties complete observations were obtained at 36 stations on land in Canada and Newfoundland (including the Labrador Coast) in addition to the valuable results secured aboard the vessel which was swung each time to eliminate disturbing effects. Northern lights were also observed on 16 of the 43 clear nights during this period of 123 days.

This was the last field-work in which Captain Peters participated. At its conclusion he was assigned to work at the Department in Washington. Here he took part in the reduction of the magnetic work over the oceans and concentrated on the investigations of tilting deviations in magnetic measurements at sea, magnetic storms, recurrence-tendency in earth-currents, and other problems connected with geomagnetism. The date of his retirement was February 28, 1931, but he was soon afterward recalled as a research associate in order that he might continue his research-work, and that his experience and counsel might be available to his colleagues. He retired finally from active duty with the Department of Terrestrial Magnetism on June 30, 1934.

When, in March 1935, the British Admiralty decided to construct a non-magnetic vessel—to be called the *Research*—for continuing the magnetic survey at sea interrupted by the loss of the *Carnegie* in 1929, the Department, upon request of the Admiralty, supplied the plans and

specifications of the *Carnegie* and the designs of instruments developed during the many years of the work at sea. In order to make more effective the Department's collaboration in this important project, Captain Peters consented to go to England in the fall of 1935 in the capacity of consultant on the design and construction of the new vessel and her instrumental equipment. During his year's stay in England, he rendered invaluable service to the Admiralty. The *Research* was



WILLIAM J. PETERS
(PHOTO OF 1935)

duly completed but before she could be put into operation the outbreak of the war in 1939 made necessary the postponement of her first cruise.

The work of the *Galilee* and *Carnegie* is one of the outstanding achievements in the history of geomagnetism, particularly as it will serve as a prototype of similar projects, like that of the *Research*, which may be undertaken in the future. The prominent part played by Captain Peters is reflected in every aspect of this great work from the planning and preparation to the actual accomplishment of the early cruises and the discussion of the final results for publication. Few geophysicists have accomplished more in establishing the premises upon which others have built fruitful theories in the attempt to solve the difficult problems encountered in the investigation of the Earth's magnetism.

As a recognized authority on polar exploration and nautical science

he was often consulted on matters pertaining to these subjects. Thus, shortly after his retirement, he rendered assistance in an investigation relating to the probable route followed by Ponce de León and to his exact landing-place near St. Augustine, Florida.

Captain Peters held membership in various scientific societies, including the American Association for the Advancement of Science, Washington Academy of Sciences, Philosophical Society of Washington, American Geophysical Union, Aeroarctic, and the American Section of the International Scientific Radio Union. He was a member of the American delegation at the meeting of the International Union of Geodesy and Geophysics at Edinburgh in 1936. He was also a member of the Cosmos Club and of the Arts Club of Washington, D. C.

He died at his home at Chevy Chase, Maryland, July 10, 1942. His widow, Beatrice Speaight Boyd Peters, and his son, Geoffrey Lloyd Peters, survive him.

No man was held in higher esteem by his colleagues and friends. His genial and kindly nature and his readiness to assist those who applied to him for aid, won for him the respect and lasting friendship of all. His modest and retiring nature masked exceptional powers for research fortified by long training in the hard school of experience and a sound knowledge of the fundamental principles of physical science. He was also endowed with no mean artistic skill as is revealed by a number of sketches and water-colors which he made at various times.

The scope and diversity of his scientific activities are evident from an inspection of the following list of his published papers.

List of publications

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