

CHRISTIAN HENRY FREDERICK PETERS.

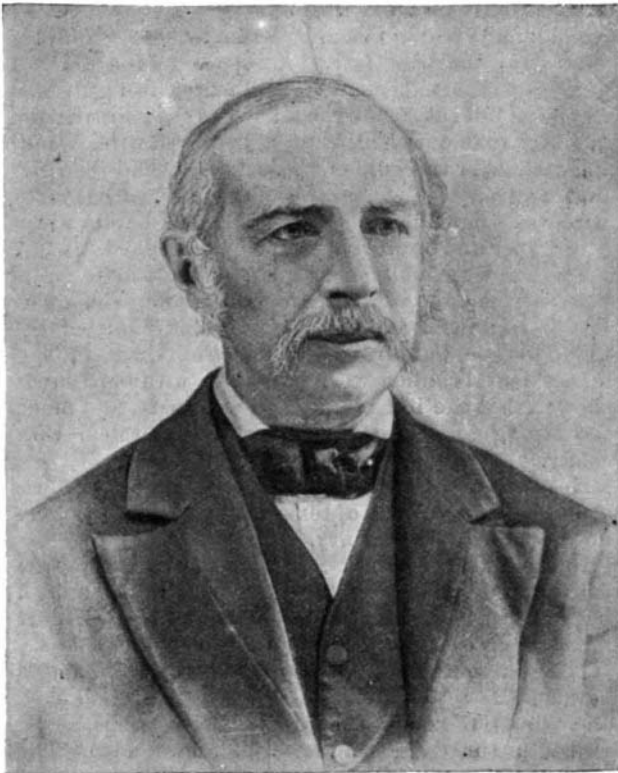
Professor Peters was born in Coldenbittel, in the Duchy of Schleswig (then a dependency of Denmark), on September 19, 1813. He was educated at the University of Berlin, where, in 1836, he received the degree of doctor of philosophy, and then spent some time in study at Copenhagen. In 1838 he accompanied Baron Sartorius von Waltershausen to Sicily, where, until 1843, he was engaged in making a survey of Mount Etna. Owing to the death of Waltershausen, the survey was never finished, but the published results of the work are said to afford the most exhaustive description that has ever been given of any mountain. At the close of this work he was engaged at Naples on the topographical survey of the Sicilies, but soon retired to join the revolutionary forces. He served under Garibaldi, and was made major in the artillery for bravery on the field of battle. Twice he was severely wounded, and when the movement collapsed, a price was set upon his head by the government. He was obliged to live in the woods for weeks, with hardly any food and no shelter, to escape capture and execution. Eventually he escaped on a small brig to Turkey, and there devoted himself to the pursuit of his chosen science. A few years later he made the acquaintance of George P. Marsh, the United States minister in Constantinople, by whom he was persuaded to come to this country. His letters of indorsement from scientists abroad, including one from Von Humboldt, secured for him an appointment in 1853 in the United States Coast Survey, and at first he was stationed at the observatory in Cambridge, Mass., but later was assigned to work at the Dudley Observatory, in Albany, N. Y.

In 1858 he was called to Hamilton College as the first director of the Litchfield Observatory in Clinton, N. Y., and thereafter remained connected with that institution until his death. In 1867 Edwin C. Litchfield, of Brooklyn, N. Y., presented the college with the sum of \$30,000 to endow a chair of astronomy, and Dr. Peters was at once chosen to that place.

Soon after his settling in Clinton he began that work with which his fame is so justly connected—the observation of the zone stars and placing them on charts. In this direction it is said that he accomplished more than any other astronomer. At the time of Herschel not over 20,000 stars were registered, and this number was increased to 50,000 by Lalande, while Dr. Peters proved and registered more than 112,000, including stars as minute as the thirteenth magnitude in his scheme. It was in prosecuting this work, which is his distinguishing contribution to astronomical science, that he also became famous as a discoverer of planetoids. While examining stars to determine their place, a strange star would be observed in the field, and which, if after-calculation confirmed the record that no star existed in that particular spot, would be reported as a newly discovered asteroid. Forty-eight of these discoveries are credited to Dr. Peters, which is a larger number than any other astronomer can claim. On the night of July 31, 1872, and again on the night of June 3, 1872, he discovered two of these planetoids. His last discovery was on the night of August 25, 1889, when he found asteroid No. 287. From his first computation it appeared that a portion of the new asteroid's orbit was within a portion of the orbit of Mars, and while subsequent calculations made this theory doubtful, still it is probably the nearest asteroid to the sun yet discovered. The largest number of these found by him in a single year (1879) was eight, and a computation of the aggregate surface of forty of them indicates an area of 266,978 square miles, or about that of the State of Texas. Dr. Peters fixed the locality of the zodiacal stars upon charts which give an accurate picture of the parts of the sky that they depict, and which will serve hereafter as a sure basis for studying changes in the heavens. Twenty of these, under the title of "Celestial Charts," were published by him, at his own expense, in 1884, and a second series was completed and ready for the press in 1888, but have not been published.

For ten years Dr. Peters made a daily observation of solar spots, making a record of nearly 14,000 spots, but

he never published his results, which still remain in the safe of the Litchfield Observatory. Every observation has a drawing showing the position of the spot as proved by calculations at the time when seen. This work is believed by astronomers to have been the most valuable of his researches, especially since stellar photography makes easily possible the star charts upon which he spent so many years.

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Under the auspices of the regents of the University of the State of New York he determined the longitude of several places in this State, including the western boundary. Dr. Peters had charge of a party that observed the solar eclipse of August 7, 1869, at Des Moines, Iowa, and in 1874 was chief of the expedition sent to New Zealand by the United States government to observe the transit of Venus on December 9 of that year. By means of double image micrometers he measured the apparent diameter of Venus, thus determining the real size of the planet with an error of probably not more than 1-300th part of its value, and also secured 237 photographs of that shy planet. Of his work at that time it was said: "There is no need of other observations. Dr. Peters has accomplished all that was to be done." He was less fortunate in the second transit of Venus, on December 5, 1882, for clouds hid the planet during the time when the observation had to be made; and likewise in 1883, during the

and the latter, with his sisters, spent several years in computing the results, also aiding in the researches necessary to its completion. Ultimately Mr. Borst claimed that the work was his own, and in that opinion he was sustained by several distinguished authorities, including Simon Newcomb and Asaph Hall, of the U. S. Naval Observatory in Washington, D. C. The case went before the courts, and a decision was rendered awarding the "Star Catalogue" to Dr. Peters as being his property, with interest on its value, and six cents damages to carry costs. It is understood that an appeal will be taken against this decision by Mr. Borst.

Dr. Peters was a member of both foreign and American scientific societies, and in 1876 was elected to the National Academy of Sciences. He attended the International Congress of Astronomers, held in Paris during April, 1887, under the auspices of the French Academy of Sciences, and at that time was made a chevalier of the Legion of Honor by the French government. The results of his researches were published in various scientific journals, but chiefly in the *Astronomische Nachrichten*.

Although a specialist, Dr. Peters was learned in many branches of science, and was a linguist of rare ability. This knowledge made him a favorite at social gatherings. He never married, and his habits were simple to the extreme. Among the students he was known as "Twinkle," but he was a strict disciplinarian, and always demanded that the dignity of his office be respected.

On Friday, July 18, he asked the college janitor to arrange the college astronomical apparatus so that he might make some observations during the evening. The next morning they found him seated on the stone steps leading to Hungerford Hall, where his apartments were. In the night death had come to him, and when daylight broke his soul was far away in the heavens among those starry bodies whose study had ever been his constant delight while he was on earth.

A JET-PROPELLED STEAM LIFEBOAT.

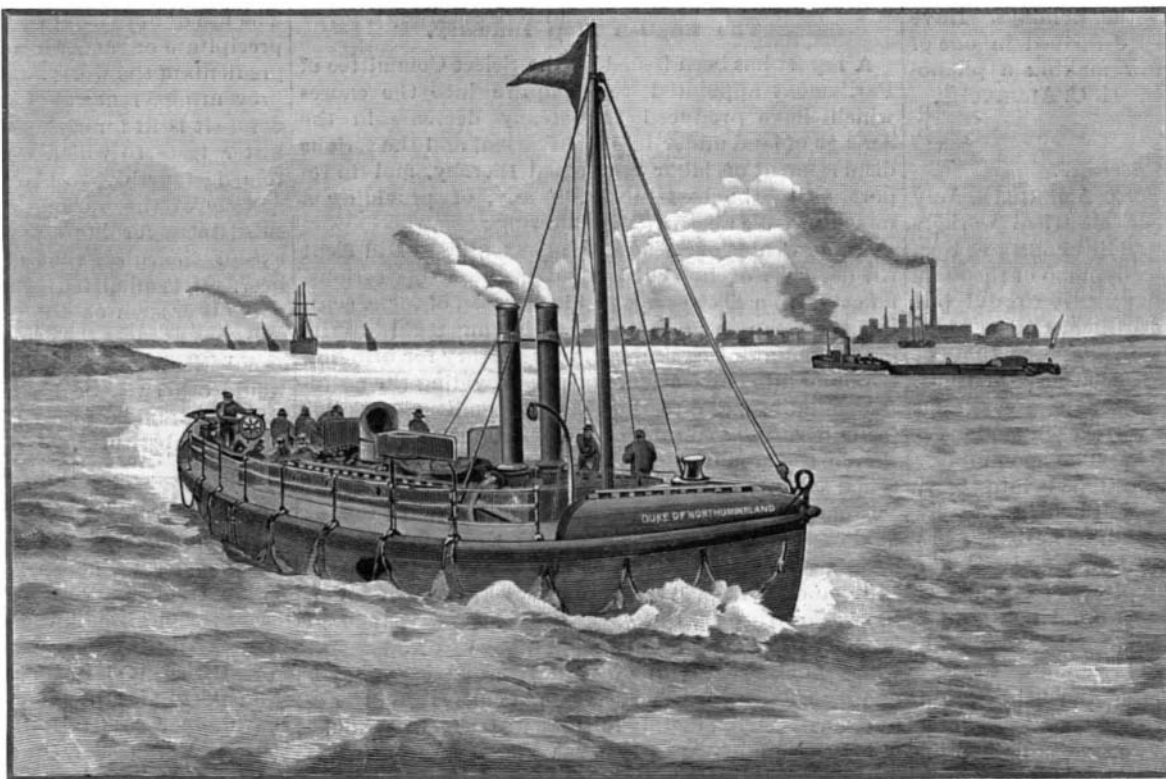
The Royal National Lifeboat Institution, after many years of effort, has at length succeeded in obtaining a lifeboat which may be mechanically propelled. At the beginning of 1888 a proposal for a steam lifeboat was submitted to the Institution by Messrs. R. & H. Green, well known shipbuilders at Blackwall, which, having passed through various modifications as the result of consultation with the committee and their professional officers, was accepted by the Institution, and a steam lifeboat, constructed of steel and propelled by a turbine wheel, has now been completed. Such a boat, if successful, will necessarily only be able to be used at a limited number of stations. Our engraving is from the *Illustrated London News*, and the accompanying particulars from the *London Graphic*. The details of this novel lifeboat, which has been named the Duke of Northumberland, and is to be stationed for the present at Harwich, are as follows:

Length, 50 feet; beam, moulded, 12 feet; breadth, extreme, 14 feet 3¼ inches; draught, loaded (extreme) with 3 tons of coal, 30 passengers, 9 crew, and full outfit, 3 feet 3 inches; displacement at this draught 21 tons; indicated horse power, 170. The propulsion is effected by a jet of water which issues from the stern, and which is impelled by a turbine wheel or pump.

It may be interesting to state the reasons for the decision given in favor of a hydraulic boat, as on the mere face of it the waste of power would appear to be a serious objection. This, however, is not really the case if the principle is compared with other methods of propulsion, and, as a matter of fact, there is no other possible way of accomplishing the task.

A paddle vessel in such a service is, of course, out of the question, as she is so easily disabled by the slightest obstacle, and under no circumstances could she be used as a sailing vessel.

A screw propeller in smooth water is the most efficient way of absorbing the power developed, but in heavy seas it would be continually out of the water, and half the time practically useless, to say nothing of

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occultation of Jupiter, a phenomenon of centuries, a similar fate befell him. But he accomplished much, and of him it has recently been said: "The reputation of this learned man fills the world, and not only that, but it is written upon the stars themselves."

An unfortunate controversy marred the last two years of his career. He sought the aid of Chas. A. Borst, in the preparation of a "Star Catalogue,"