

machine in the previous figures will show that the extremities of the wings have been differently constructed, being composed at the ends of a series of feather-like sails. These latter are connected with a small machine, near the operator's body, which is driven by compressed carbonic acid gas; it is set in motion by a simple pressure of the finger. Such an addition has of course increased very considerably the weight and, therefore, the difficulty of handling the apparatus, and as yet it has only been used when the conditions were very suitable, as one serious fall would break up the machine.

Nevertheless the results up to now are very promising, and in calm weather Herr Lilienthal has been able to considerably prolong his flights. When, with the ordinary sailing machine, he would have come naturally down to the ground, he has found that an occasional flapping of these wings has helped to sustain him a longer time in the air, and to consequently cover greater distances.

Herr Lilienthal has shown now, that, with the simple sailing machine, flights can be made without any great risk. It would be good for the future progress of this mode of sailing if those interested in it, and who have the time and money, would take it up and pursue it further. What is wanted now is experience, and this can only be obtained by the co-operation of many workers.

PETERS—DENZA—RANYARD.

ASTRONOMICAL science has lost three of its votaries during the present month. Dr. C. F. W. Peters died on December 2, and Father F. Denza, as well as Mr. A. C. Ranyard, passed away on Friday last.

Dr. Carl Friedrich Wilhelm Peters, Director of the Königsberg Observatory, died on December 2, after a protracted illness. He was born on April 16, 1844, at the Pulkowa Observatory, where his father, Prof. C. A. F. Peters, held an appointment under the Russian Government. In 1849 his father was appointed to the Chair of Astronomy at Königsberg, and in 1854 he was made Director of the Altona Observatory, which was afterwards transferred to Kiel. The son studied astronomy and mathematics at Berlin, Kiel, München, and Göttingen, and was placed on the staff of the Hamburg and Altona Observatories. Between 1869 and 1872 he made some valuable pendulum observations, chiefly for the Prussian Government. As Privatdocent at Kiel University he undertook a long series of chronometer tests for the German Navy, in the course of which he proved that they are influenced by changes of humidity as well as by changes of temperature. In 1880, upon the death of his father, he edited the *Astronomische Nachrichten* for a year, after which he was appointed Extraordinary Professor at Kiel University. In 1883 he undertook the direction of the Naval Chronometric Observatory at Kiel, whence he proceeded in 1888 to the directorship at Königsberg, where he terminated a useful and laborious career.

Father F. Denza died at Rome on the 14th inst. from cerebral hæmorrhage. He was well known to the scientific world by his works in astronomy, meteorology, and terrestrial magnetism, and at the time of his death was President of the Italian Meteorological Society, and Director of the Observatory at Moncalieri, which he founded in 1859, as well as of the Vatican Observatory, which was established by the Pope in 1891. It was owing to the untiring energy of Father Denza that the *Corrispondenza Meteorologica Italiana* was established in connection with the Alpine Clubs, and that the results of observations at a large number of stations in the Alps and Apennines have been regularly published in the organ of the Italian Meteorological Society.

He was elected an honorary member of the Royal Meteorological Society in 1870.

In astronomy his chief work relates to the observation of meteors. For several years he issued instructions to observers of meteors previous to every important shower, and he published numerous tables and papers on the observations carried on under his guidance, both in *Comptes-rendus* and the *Monthly Notices* of the Royal Astronomical Society. When the Directorship of the Vatican Observatory was taken by Father Denza a very comprehensive programme was drawn up, embracing investigations in meteorology, terrestrial magnetism, geodynamics, and astronomy. Observations in each of these branches of knowledge have increased in number every year since then, and the fourth volume of the *Pubblicazioni* of the Observatory, received by us on the same day as the news of Father Denza's death, is even greater in bulk than any of the previous ones. Father Denza was chiefly instrumental in making the Vatican Observatory one of those co-operating in the production of the photographic star-chart. He devoted his best energies to the advancement of the scheme, and to the progress of astronomical photography. The reports to which reference has been made, contain evidence of his knowledge of what had been done in other astronomical observatories, and of his ability to direct and further the advancement of celestial photography. His services to astronomy have earned for him an honoured place in our memory of the sons of science.

Mr. Ranyard was born in 1845. He was educated at Cambridge University, and was called to the Bar in 1871. He was one of the founders of the London Mathematical Society, of which he was originally joint secretary with Mr. George De Morgan, Prof. Augustus De Morgan being president. He became a Fellow of the Royal Astronomical Society in 1864. In 1870 he was assistant secretary of a joint committee of the Royal Society and the Astronomical Society, which organised the expedition despatched to Sicily, Spain, and Oran to observe the total solar eclipse of December 21. On his return to England he undertook to assist Sir G. B. Airy in the preparation of the report of the observations of the total eclipses both of 1870 and 1860. Ultimately Sir George Airy transferred the work entirely to Mr. Ranyard, and in 1880 the report was published by the Royal Astronomical Society as vol. xli. of its "Memoirs." He observed the total eclipse of July 29, 1878, from Cherry Creek, near Denver, Colorado, and the total eclipse of May, 1882, from Sohag, in Upper Egypt. In addition to papers on the corona and matters connected with physical astronomy, he also published papers on the "Early History of the Achromatic Telescope," and on "Photographic Action." In conjunction with Lord Crawford and Balcarres, he undertook in 1872 a series of experiments on photographic irradiation; and in 1886 he demonstrated by a series of experiments that the intensity of photographic action varies directly as the brightness of the object photographed, and directly as the time of the exposure. The "Old and New Astronomy," designed by Mr. Proctor, was completed in 1892 by Mr. Ranyard, who contributed to it some very important sections on the structure of the stellar universe.

NOTES.

THE newly-discovered gas is to be the subject of a discussion at a meeting of the Royal Society on January 31, when Lord Rayleigh and Prof. Ramsay will present their paper. This will be the first meeting under a resolution of the Council of the Society passed last session, whereby certain meetings, not more than four in number, are to be devoted every year, each to the hearing and consideration of some one important communication, or to the discussion of some important topic.