

Obituary.

PROF. RAOUL GAUTIER.

SCIENCE has lost a distinguished member, and English geodesists and astronomers a friend, in Raoul Gautier, who died on April 19, at Geneva.

Raoul Gautier came of a family which has served Swiss and international science for many years. We find Jean Gautier, for example, professor of philosophy and physics at the University of Geneva in the beginning of the eighteenth century. An account of his observation of the eclipse of the sun in 1706 appears in *Philosophical Transactions* (vol. 25, No. 306, pp. 2241-2246). In the early years of the nineteenth century another Gautier, Jean Alfred, was beginning to make his name as an astronomer. To him is due the present Geneva Observatory, built in 1830, although Arago seems to have shared to some extent the responsibility for it, in so far as his comments on the previous observatory did not lack candour. In 1842, Émile Gautier was collaborating with Airy in the observation of another eclipse. We hear of Émile in London, Oxford, and Cambridge. He is not, perhaps, the only one who records a disinclination "pour parler d'affaires" after an excellent lunch in Trinity. In 1883, after a truly international training, he took charge of the Observatory, and he is, perhaps, as well known as a meteorologist as an astronomer. A point which impressed his countrymen, as well as his foreign colleagues, was that humanity and helpful understanding which stood both himself and his wife in such good stead during his term of office.

Raoul, their son, was born in 1854. His education was singularly complete on the physical as well as on the mental side. He travelled early, learnt English and German when young, and studied the classics, as well as mathematics, anatomy, and zoology. He was a fencer, a mountaineer, and a horseman. He became a man of the world with a singular charm of manner, at the same time as he laid the foundation of his scientific career. When master of arts, he took up the family tradition of astronomy.

Five years at Leipzig, education and friendship from Bruhns, Frederic Zoellner, Neumann, and other mathematicians, a visit to Uppsala, where Struve presided over a meeting of the *Astronomische Gesellschaft*, and where he met Gylden, Schönfeld, and Backlund, began to polish the expert. Gautier's first essay in journalism was a report for the *Journal de Genève* on this Uppsala meeting. His next undertaking was a study of planetary orbits (an inherited taste), and it was certainly a 'gros travail' to observe, to compute, and to analyse the facts that led to the publication of "La Comète périodique de Tempel 1867 II, étude consacrée spécialement aux apparitions de 1873 et de 1879".

This planet was not altogether a happy one for Gautier. The strain of calculation brought him his doctor's degree, but cost him two years of enforced rest. In 1885, we find him once more engaged in wrestling with the considerable influence of Jupiter's

neighbourhood upon the same planet. *Astronomische Nachrichten*, the *Comptes rendus*, and *Archives des Sciences physiques et naturelles* contain the results of his labours on the hoped-for reappearances of 1892, 1898, and 1905. Unfortunately, the planet did not reappear.

In the 'eighties, Gautier frequently visited the Neuchâtel Observatory to work with its director, Hirsch. In 1887, Gautier secured his doctor's degree in mathematical science. At thirty-three years of age, with three children, and three branches of mathematical science in which to qualify, Gautier confessed to a lack of that elasticity one expects of twenty, but he secured his degree, and in 1889 succeeded to the chair of astronomy and the directorship of the Geneva Observatory. In 1885, he was given the chair of physical geography, re-established in that year after a period of eclipse. We find him more interested perhaps in meteorology and oceanography than in morphology. At this time, Gautier was professor at the University, secretary of the faculty of science, and secretary of the senate. He was Vice-Rector of the University from 1916 until 1918, and Rector from 1918 until 1920.

An evidence of Gautier's activities in the 'nineties is contained in "Le Service chronométrique à l'Observatoire de Genève et les concours de Genève avec une étude des épreuves instituées dans d'autres observatoires". This side of his work has found recent expression in the new Salle des Chronomètres (1924).

In 1900, Gautier observed the eclipse in Algeria, and in 1905 was with Sir Norman Lockyer in Majorca, where they had the mortification of finding bad weather whilst Algeria remained clear and fine. In 1908, important spectroscopic observations on Morehouse's comet, and in 1909-10 Halley's comet, must have brought him back, with satisfaction, to his first love, whilst Nova Persei, Nova Aquilæ, and Nova Cygni he found "fort intéressantes".

As a meteorologist, Gautier began to install new apparatus in the Geneva Observatory in 1897. For many years he was engaged in the study and comparison of meteorological observations, prior to 1926, made in the vicinity of Geneva. 1912 was almost wholly devoted to this end, and his results—not, unfortunately, final—are given in *Archives*, vols. 31 and 32. His interest in meteorological observation at the Great St. Bernard (where he installed a Fuess barometer in 1903) and his arrangements for pilot balloon observation will not be forgotten, nor will his services in the creation of the observatory at the Jungfrauoch. In this latter enterprise he was able to count upon the generosity of fellow-townsmen, who knew how to appreciate his services and contribute to his undertakings. Gautier must have felt his retirement in 1928, but he was confident in his successor, and glad, in a measure, to relax the strain. His public services had been great. He was consecutively member, secretary, and head of the Swiss Geodetic Commission. An active member of the old International Geodetic Association, he worked with Ferrero, Bakhuisen,

Arrillaga, and Helmer. Copenhagen, Budapest, London, and Cambridge saw him at their meetings. It was at the London Conference of 1909 that he first became well known to British geodesists. Those of us who recall that Conference, at which Baron Fötvös also first made himself generally known, look back with regret on his manly figure and peculiar charm. During the War, he acted as president of that geodetic association of neutral countries which helped to keep international enterprise alive. In 1920, he was chosen to represent his country on the International Geodetic and Geophysical Union. We met him at Rome, at Madrid, and at Prague, and the memory we shall retain of him is that of a courteous, statesman-like gentleman whose ripe judgment and unflinching interest were of quite exceptional value to the Union.

Gautier was elected vice-president of the Geodetic Section of the Union in 1922. He was president of the Swiss National Committee for Geodesy and Geophysics; president of the federal meteorological committee, and a member of the international committee of weights and measures. It does not surprise one that he was also the chief engineer of the 1st Corps of the Swiss Army. We bid good-bye, then, to as versatile a man as modern science can show, and to one whose peculiar social and administrative gifts were of the greatest help in any international gathering.

DR. FREDERICK MUIR.

IN the death of Dr. F. Muir, which occurred on May 13, entomology loses one of its keenest and most experienced devotees. Born in 1872, Frederick A. G. Muir served in his early life with the Eastern Telegraph Company and was stationed during different times at various localities on the eastern shores of Africa and also at Aden.

Being an ardent entomologist from boyhood, Muir's tropical experience broadened and intensified his great natural ability as a student of insect life. It was while he was still in the telegraph service that he first came into touch with the late Dr. David Sharp. In 1905 it was through Dr. Sharp's influence that Muir adopted entomology as a profession and joined the scientific staff of the Hawaiian Sugar Planters' Association in Honolulu. The worst troubles of the sugar-cane growers in the Hawaiian Islands were imported insect pests, and it fell to Muir to explore many lands in order to discover the native countries of these pests, with the object of investigating their indigenous enemies. In this work Muir made repeated and often extremely arduous journeys to such lands as Japan, China, the Philippines, Formosa, the East Indies, Queensland, and other parts.

Few naturalists of recent years have had the same intimate knowledge of the Malay Archipelago as Muir. His duties took him on more than one occasion to Java, New Guinea, Amboina, Ceram, and other of the islands, where he had to face hardship and sickness, and to work under improvised conditions of the most primitive kind. Muir fortunately lived to see the results of his work

on biological control bear abundant fruit. The predaceous Capsid-bug *Cyrtorhinus mundulus* discovered by him in Fiji and Australia in 1919 was the agent which finally achieved complete economic control over the sugar-cane leafhopper. His work on the Tachinid fly, *Ceromasia sphenophori*, which, after much journeying, he eventually obtained in New Guinea, has been the major factor in the subjugation of the cane borer weevil. Perhaps his most striking success in the field of biological control was his introduction of the solitary wasp *Scolia manilica* from the Philippines into the Hawaiian Islands, in 1916, where it achieved, in a remarkably short time, a high degree of control over the *Anomala* beetle.

Muir's pioneer work in the field of biological control has had an enormous influence over the prosperity of the Hawaiian Islands, where his name is very widely known. His interest in entomology, however, covered almost all fields of the subject. On the taxonomic side he became the recognised authority on the difficult group of the Fulgoroidea. His skill in minute dissection led him to explore various aspects of morphology, and his fundamental study, in conjunction with Dr. David Sharp, on the genitalia of Coleoptera is a standard monograph. In his travels Muir had little opportunity to publish, and his many papers were mostly written during periods at headquarters or while on leave. In the few years of his retirement at Warnham, in Sussex, he took full advantage of the opportunity for unfettered research. Severe illnesses, however, incapacitated him for much of the time, but his optimism led him to plan work for the future. Long subjection to tropical conditions unquestionably sowed the seed of illnesses that led to his premature death. One of the last published contributions from his pen was in the form of a letter, dated May 11, entitled "Disease in Nature", which appeared in these columns so recently as May 23.

At the time of his death, Muir was still a member of the scientific staff of the Hawaiian Sugar Planters' Association, his services being retained in a consultative capacity. In 1918 he married Miss Margaret Anne Sharp, third daughter of Dr. David Sharp, and leaves one son. A few years ago he received the honorary degree of D.Sc. from the University of Hawaii, and in 1930-31 he was a member of the council of the Entomological Society of London, being a vice-president for the year 1930.

A. D. I.

WE regret to announce the following deaths:

Prof. I. P. Church, emeritus professor of civil engineering at Cornell University, on May 7, aged eighty years.

Prof. Louis Dollo, professor of geography and animal palaeontology in the University of Brussels and curator of the Royal Museum of Natural History, on April 19, aged seventy-four years.

Mr. T. T. Gray, president of the Gray Laboratories of Newark, New Jersey, known for his work in petroleum technology, on April 27, aged forty-nine years.

Mr. C. T. Heycock, F.R.S., Goldsmiths' reader in metallurgy in the University of Cambridge and Prime Warden of the Goldsmiths' Company in 1922, on June 3, aged seventy-two years.