

## GÖSTA MITTAG-LEFFLER (March 16, 1846 – July 7, 1927)

by HEINZ KLAUS STRICK, Germany

The rumour persists to this day: it was MAGNUS GÖSTA MITTAG-LEFFLER's fault that the Swiss industrialist ALFRED NOBEL did not include a prize for mathematics in his foundation (though he did for physics, chemistry, medicine, literature and peace). It is said that MITTAG-LEFFLER had an affair with SOPHIE HESS, NOBEL's mistress, and that NOBEL resented this and with him – in a kind of kinship – the entire mathematics community.

But in fact MITTAG-LEFFLER did not even know NOBEL's mistress.

The truth is quite simple: NOBEL did not care for mathematics – for him, the subject did not belong to the sciences that "contribute to the welfare of mankind", as it says in the foundation charter of the NOBEL Prize.

The fact that ALFRED NOBEL considered the "auxiliary science" of mathematics to be rather unimportant also became apparent when MITTAG-LEFFLER approached him in vain about establishing a chair in order to keep the Russian mathematician SOFIA KOVALEVSKAYA at Stockholm University.

GÖSTA LEFFLER was born in Stockholm on 16 March 1846, the first of four children of the headmaster JOHAN OLAF LEFFLER and his wife GUSTAVA WILHELMINA LEFFLER, née MITTAG. GÖSTA only adopted the double name MITTAG-LEFFLER after entering university – presumably to show his esteem for his mother's family. The versatile young man began studying mathematics at the University of Uppsala in 1865.

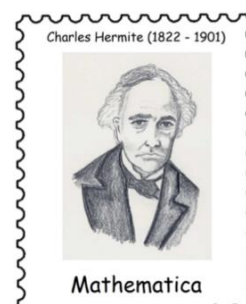
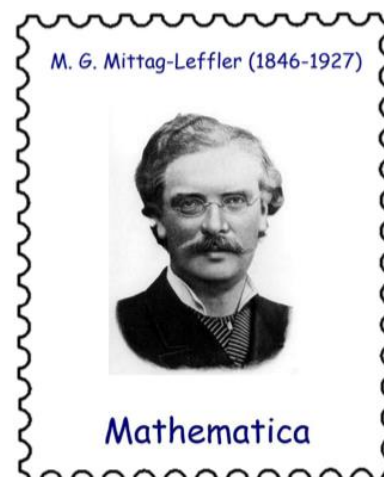
After completing his studies, he was employed as a lecturer in 1873 – with the requirement that he deepen his previously acquired specialist knowledge at foreign universities. MITTAG-LEFFLER was very interested in attending the lectures of CHARLES HERMITE in Paris, whose reputation as an important mathematician had reached as far as Sweden.

CHARLES HERMITE was extremely popular with the students because of his competent and enthusiastic lectures. MITTAG-LEFFLER, however, had difficulties following his explanations on the subject of "elliptic functions". When he confessed this to his professor, he recommended that he move to Berlin: "*Vous avez fait erreur, Monsieur, vous auriez dû suivre les cours de WEIERSTRASS à Berlin. C'est notre maître à tous.*" [You have made a mistake, Sir, you should have taken the WEIERSTRASS course in Berlin. He is the master of us all.]

MITTAG-LEFFLER, who until then had not even heard the name of the German mathematician, was just as impressed by this advice as he was then in Berlin in view of KARL WEIERSTRASS's fundamental attitude that scientific progress had nothing to do with the nationality of the person who achieved these feats – and this at a time of heated nationalist sentiments in both countries after the Prussian-French War.

(drawings: © Andreas Strick)

In 1875 MITTAG-LEFFLER learned that a chair of mathematics had been advertised in Helsingfors (today: Helsinki) and he informed WEIERSTRASS that he wanted to apply for this position.

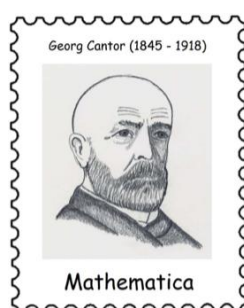
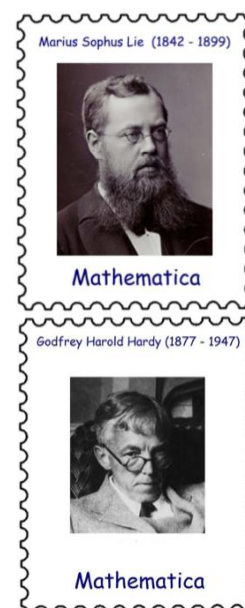


WEIERSTRASS had just learned at that moment that his efforts to establish a position for MITTAG-LEFFLER as an associate professor in Berlin had been successful, but MITTAG-LEFFLER preferred to move to Finland – the problems seemed too great to him, a foreigner, in a country whose rulers and politicians increasingly emphasised the importance of national affiliation.

After working for 5 years, MITTAG-LEFFLER returned to his home town of Stockholm and took over the chair of mathematics at the newly founded university. At the suggestion of MARIUS SOPHUS LIE, he founded an international journal under the name *Acta Mathematica* in 1882.

As a citizen of a neutral state, he could credibly pursue his goal of reconciling the mathematicians of Germany and France by publishing essays in both German and French. He was editor of the journal for 45 years.

After the First World War, he continued his international mediation activities in collaboration with GODFREY HAROLD HARDY – even in the 1920s there were great reservations about cooperation between scientists from the countries of the former wartime enemies.

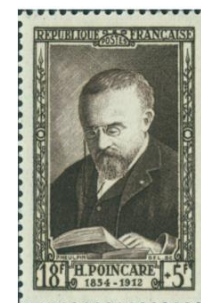


MITTAG-LEFFLER had a strong sense for the quality of the entries submitted. For example, he immediately recognised the fundamental importance of GEORG CANTOR'S set theory. However, when he gave CANTOR the well-meaning advice in 1885 – after printing several articles – to wait ("one hundred years") before publishing an article on the continuum hypothesis because the time was not yet ripe, CANTOR felt hurt and broke off contact with him.

On the French side, it was above all the treatises of HENRI POINCARÉ that contributed to the international reputation of the *Acta Mathematica*.

One of POINCARÉ'S works, however, was causing MITTAG-LEFFLER some headaches:

According to the unanimous opinion of the jury (consisting of himself, HERMITE and WEIERSTRASS), POINCARÉ was supposed to have received a copy of a book from King OSCAR II of Sweden for a paper on the three-body problem. After sending the printed treatise, POINCARÉ discovered an error that could not be corrected, so that MITTAG-LEFFLER had to see to it that the writings already delivered were returned and destroyed (while POINCARÉ had to bear the considerable printing costs).



Nevertheless, MITTAG-LEFFLER tried several times to convince the NOBEL Prize Committee to award POINCARÉ the prize in physics, but he was unable to prevail.

The fact that MITTAG-LEFFLER was able to start such a journal and continue to run it without worries also had something to do with his financial situation, which changed considerably in 1882. Through his marriage to SIGNE LINDFORS he now had a very large fortune. He lived with his family alternately in a Stockholm suburb and in a country house on a lake in central Sweden. In his city villa he set up a library, of which HARDY reports that all mathematical reference books and journals could be found there; the use of the "private" library was, however, open to all interested parties, especially the students of the university.

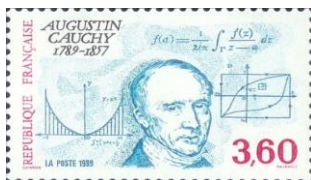
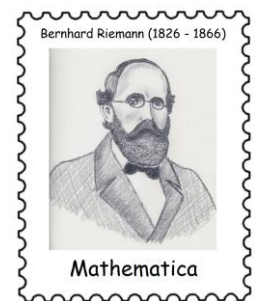
On the occasion of MITTAG-LEFFLER'S 70th birthday in 1916, the couple bequeathed the villa and the library holdings to *the Swedish Academy of Sciences* (today it houses the *Mittag-Leffler Research Institute*). The estate also includes MITTAG-LEFFLER'S correspondence with more than 3000 correspondents all over the world.

MITTAG-LEFFLER was a committed advocate for women's rights. In 1884, he provided SOFIA KOVALEVSKAYA, a student of WEIERSTRASS, with a temporary position as a mathematics lecturer. In 1889 she became the first woman in recent scientific history to be appointed to a professorship in mathematics. She lectured on analysis, became co-editor of the *Acta Mathematica* and supported MITTAG-LEFFLER in the organisation of international mathematics congresses.

The fact that MARIE CURIE was the first woman to receive the NOBEL Prize for Physics in 1903 can also be attributed to MITTAG-LEFFLER's influence.

MITTAG-LEFFLER had been awarded many honorary doctorates and memberships for his services to international professional exchange, but his own professional contributions had also contributed to his international reputation.

For example, *Mittag-Leffler's theorem* (on the existence of meromorphic functions with an infinite number of poles) is still an important part of lectures on function theory – that is, the theory of complex-valued functions, which was developed in the 19th century primarily through the contributions of AUGUSTIN CAUCHY, BERNHARD RIEMANN and KARL WEIERSTRASS.



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