

Bologna, of the Royal and Imperial Geographical Society of Vienna, and the Mathematical Society of Hamburg. He was elected a Foreign Member of the Royal Society in 1860.

The preceding notice has been extracted from a manuscript memoir of Professor Bache kindly supplied by Dr. Joseph Henry.

GEORG FRIEDRICH BERNHARD RIEMANN was born on the 17th of September 1826 at the village of Breselenz, near Dannenberg, in Hanover. He was the second of six children born to the Pastor of Breselenz. Under his father's sole tuition till eight years of age, he exhibited great powers of arithmetical calculation. An able tutor, who from this time assisted in teaching him, was forced to make unusual exertions in order to follow the short and original solutions of the problems proposed to his pupil.

In the spring of 1840 Riemann was sent to the Lyceum in Hanoaer, where he remained two years. He was then placed in the Gymnasium of Lüneburg under Director Schmalfuss. The latter soon discovered Riemann's mathematical talent, and not only gave him problems made expressly for him during school hours, but lent him works on the higher mathematical subjects, which he brought back after having thoroughly mastered them in the course of a few days. A week sufficed to make Legendre's theory of numbers his own for life.

He entered the University of Göttingen at Easter 1846, by his father's wish, as a student of theology. Here the lectures of Gauss stirred up in him such a passion for exact science that he sought and obtained permission from his father to devote himself entirely to the studies of his choice. For two years, commencing with Easter 1847, he studied under Jacobi at Berlin. He then returned to Göttingen, and graduated, his dissertation on the foundations of a general theory of functions of a variable complex magnitude obtaining the warm approval of Gauss.

In 1854 he qualified for the post of a teacher by a lecture on the hypotheses on which geometry is founded, and by writing a memoir on the representation of a function by a trigonometric series. In September of the same year he wrote on the distribution of electricity in non-conductors. In 1855 he contributed to Poggendorff's 'Annalen' a paper on the theory of Nobili's coloured rings, and one on the mathematical theory of the galvanic current. During the two following years he suffered much from failing health.

In 1857 he became Professor Extraordinarius, and wrote four papers which appeared in vol. liv. of Crelle's Journal. In 1859 he was elected a Corresponding Member of the Academy of Sciences of Berlin, and contributed to the 'Abhandlungen' of the Academy a memoir on the number of primes below a given number, and was nominated Professor Ordinarius. In 1860 he was elected a member of the Academy of Sciences of Göttingen, and in the course of this and the following year wrote a memoir on the propagation of plane waves of finite amplitude in air, and one

on the motion of a fluid homogeneous ellipsoid. These two memoirs were printed in the eighth and ninth volumes of the 'Abhandlungen' of the Society.

Riemann married in 1862. In July of the same year he suffered from an attack of pleurisy. Through the good offices of Professors Weber and v. Waltershausen he obtained leave of absence and pecuniary assistance from a fund available for such purposes, to enable him to travel in Italy. He quitted Göttingen in November and passed the winter in Messina. His health in some degree restored, he left Messina in March 1863, on his homeward journey, stopping in Palermo, Naples, Rome, Pisa, Florence, and Milan, and making the acquaintance of the most distinguished men of science of Italy. He arrived in Göttingen in July, suffering from a relapse caused by exposure to cold in crossing the Splügen. In the following August he entered upon his second journey to Italy. The Professorship at Pisa, vacant by the death of Mosotti, was offered to him at the suggestion of Professor Betti, but declined by the advice of Riemann's friends on account of the state of his health. He passed two successive winters in Pisa. In the autumn of 1865 he returned to Göttingen, and began to write a paper on the mechanism of the ear, which was published after his death by Professors Henle and Schering. He entrusted the completion of a paper on the surface of least area, having a given boundary, to Dr. Hattendorff. This paper is printed in vol. xiii. of the 'Abhandlungen' of the Society of Göttingen. Desirous of passing some months on the shores of the Lago Maggiore in order to collect strength sufficient to enable him to complete his unfinished works, he left Göttingen on the 16th of June 1866, and after some delay, caused by the events of the war, reached Lago Maggiore on the 23rd of the same month.

Perfectly conscious of his approaching end, and fully prepared for it, he repeatedly urged his physician to tell him how long he had to live, in order that he might thereby be guided in the selection of a labour that it might be possible for him to complete. He died in entire possession of his faculties on the 20th of July 1866, at Selasca, near Intra, on the Lago Maggiore, having only the day before worked on the mechanism of the organs of hearing, whilst he warned his attendants that his death was at hand.

He is gratefully remembered by his pupils for his liberality in imparting to them the results of known, new and important unpublished researches, and for the unwearied zeal with which he strove to impress upon them the whole truth of his lessons.

The materials for the preceding sketch of Professor Riemann's life were obtained from a 'Gedächtniss-Rede,' addressed to the Royal Society of Göttingen by Professor Schering, and some manuscript notes supplied by Professor Clebsch.