

leads to self-sacrifice for an ideal. The most successful pupil is probably Prof. Calzia in Hamburg, who, in a favourable environment created by Meinhoff, has built up the most completely equipped laboratory of the present day. A favourite pupil, Prof. Chlumski, has now a laboratory in the University of Prag. His latest pupil and assistant, the Abbé Millet, has been appointed to take charge of Rousselot's laboratory.

In establishing experimental or laboratory phonetics, Rousselot's scientific influence has been decisive. In France, laboratory work has been begun at Grenoble and Montpellier. Work with Rousselot's methods has also been introduced into the Sorbonne. In Germany, the large laboratory at Hamburg and the pathological speech laboratory at Berlin are based on his methods; smaller beginnings are found in other universities. In the United States I built up an extensive laboratory at Yale University, but the work was dropped after my departure. The demand for this work in that country is now pressing, but no men can be found who have learned the methods. In England I have for twelve years conducted researches on speech in nervous diseases, using Rousselot's graphic method, and I scarcely need say that in Vienna the work is based on Rousselot's ideas and methods.

In one way it might be said that Rousselot just lived to see the realisation of his ideal as expressed by Prof. Bréal. The adjective "experimental" need no longer be used; there is no other kind of phonetic science. This means that in investigating living speech, all judgments by the ear become quite subordinate to the study of registrations. But no one could for a moment think of any antagonism between the phonetics of present-day speech and the science of historical phonetics treating of sound change in the past. In fact, what experimental phoneticians have accomplished in their domain is a small matter in comparison with the magnificent work of past and present linguists. What Prof. Bréal meant to point out was probably that when the historical phoneticians wish for explanations of the past facts of sound change, they must seek the sources of similar processes in living speech; this information can be obtained only through experimental phonetics. It behoves experimenters, however, to recognise that in this direction they have been able to advance only a very small way.

Experimental work was begun by men in other sciences, such as Brücke, Donders, Hermann, Helmholtz and others—nearly all physiologists, but the unification of effort into a science was the work of Rousselot. He is fully entitled to be called the "Father of Experimental Phonetics." E. W. SCRIPTURE.

SIR GUILFORD L. MOLESWORTH, K.C.I.E.

THE death on January 21 at the age of ninety-six of Sir Guilford Lindsey Molesworth removes one whose name has long been a household word among engineers. To few it is given to become a leader in his profession, but Sir Guilford Molesworth not only rose to distinction and became the president of the Institution of Civil Engineers, but he also compiled a standard work of reference which has been carried into

the remotest corners of the earth. Published first in 1862, his "Pocket Book of Engineering Formulæ" passed through no fewer than twenty-four editions before 1900. A "Molesworth" was to be found in the pocket of practically every engineer, and its pages have been thumbed in many a difficult situation, knowing that its contents could safely be relied on.

Born in Southampton on May 3, 1828, nine years before Queen Victoria came to the throne, Sir Guilford was the son of the Rev. J. E. N. Molesworth, vicar of Rochdale, grandson of John Molesworth the mathematician, and was a descendant of the first Viscount Molesworth, created in 1716. He was educated at King's School, Canterbury, and at the College of Civil Engineering, Putney, and then was apprenticed to Fairbairn, the leading engineer of his day. He gained experience in railway engineering on the London and North-Western Railway, and London, Brighton, and South Coast Railway, and during the Crimean War was employed in Woolwich Arsenal. In 1859, at the age of thirty-one, he went out to the East in connexion with the first railway in Ceylon: that from Colombo to Kandy. Three years later he became chief resident engineer of the line, and in 1867 Director of Public Works. From Ceylon, in 1871, he passed into the service of the Indian Government as technical adviser on railways and held that position until 1889, receiving the honour of knighthood in 1888. He had seen active service in Afghan and Burma, and after his retirement was employed in various government missions, such as reporting on the Uganda Railway. He also became known as a writer on the decimal system, bimetallicism, taxation, and other subjects. In 1904, at the age of seventy-six, he was chosen to succeed Sir William White, the great naval architect, as president of the Institution of Civil Engineers, and his address contains an admirable summary of the public works of India. Prefacing his remarks by a saying attributed to Macaulay to the effect that "a broken head in Coldbath Fields created greater excitement in England than three pitched battles in India," he reviewed the progress of the irrigation works and the railways of India, and referred to the Indian Government as "the purest administration in the world." Speaking of the resources of India, he said its coal fields covered an area of 35,000 square miles and contained some 20,000 million tons of coal.

A man of extraordinary physical energy, when in Uganda in 1899 Sir Guilford cycled 46 miles on the hottest day of the summer "without experiencing any fatigue," and in the early part of the War, when well over eighty years of age, he served as a skilled mechanic in one of the munition shops of Messrs. Vickers at Cranford.

WE much regret to announce the death on January 26, at the age of seventy-one years, of Sir James Mackenzie, F.R.S., honorary physician to his Majesty in Scotland. Sir James will be remembered as a pioneer investigator on cardiac disease, and only recently was awarded the Charles Mickle Prize offered by the University of Toronto for the best work to advance sound knowledge of a practical kind in medical art or science during the past ten years.