

importance. At the XI International Geological Congress, held in Sweden in 1910, Högbom was a leading personality, being at that time President of the Geological Society of Stockholm.

In later years Högbom devoted a great deal of time and work to the history of science, especially geology. In his modest manner, Högbom said that "a man long past retiring age should know his limitations and act accordingly, especially when writing for publication". But he was active and keen until a few days before his death. Even in geology there is work that can best be done by wise older men with lifelong experience and deep resources of knowledge. Högbom has not only given an historical background to certain aspects of his science, but his philosophical treatment has stirred and stimulated those who are today active in collecting new facts in the field.

One of his very last works—if not the last—still makes very interesting reading: *Die Atlantisliteratur unserer Zeit* (The Atlantis-literature of our time) (*Bull. Geol. Inst. Upsala*, xxviii, 1938). From the point of view of a geologist he reconsiders with sound scepticism and yet open-mindedness the possibility of some reality behind the ancient legend and its thousand modern interpretations.

Extensive and valuable as Högbom's publications are, they alone do not do full justice to their author. Högbom was a great teacher and an eminent lecturer with a rare ability of stimulating his audience. His excursions were models, his vigour and endurance matched his wide knowledge and keen interest. Many of the active geologists of Sweden today owe their professional training to him. They have not only received scientific stimulus from him, but also the memory of a sterling personality.

Professional honours were bestowed upon Högbom from many lands, and he was made a Foreign Correspondent of the Geological Society of London in 1911, and a Foreign Member in 1927.

A bibliography of Högbom's works up to 1916 will be found in volume xv of the *Bulletin of the Geological Institution of Upsala*, the complimentary volume in honour of his 60th birthday.  
N. G. H.

FRANZ YOUSSEVICH LOEWINSON-LESSING died on 24 October, 1939. His death is a heavy loss, both to the science of petrology and to his numerous friends and pupils.

He was born in St. Petersburg on 9 March (25 February, Old Style) 1861. After graduating in 1883 at the University of St. Petersburg he worked there as an assistant in the Department of Geology and in 1889 he became a private docent. In 1892 he was appointed Professor of Geology in

the University of Dorpat (Youriev) and in 1902 Professor of Geology, Petrology and Mineralogy in the newly founded St. Petersburg Polytechnic Institute, which post he retained until 1930. During the same period he was also lecturing at the Women's College and at the University of St. Petersburg (Leningrad). In 1925 he was elected a member of the Russian Academy of Sciences and appointed director of the Geological Museum and Petrographical Institute of the Academy. In 1899 he was elected a Foreign Correspondent and in 1914 a Foreign Member of the Geological Society of London. He was also an honorary or foreign member of many other societies, including the Geological Society of America and the Société géologique de Belgique.

Loewinson-Lessing was pre-eminently a petrologist and his fame in this field of study spread far beyond the confines of his native country. But his interests and his teaching covered a much wider field, and his publications include books on crystallography and general geology. He was also responsible for a number of translations into Russian of books by Groth, Brauns and Walther.

His first paper, published in 1884, dealt with a variolite from Yalguba, Karelia. It was this study, recently revised by him, which led him to the idea of liquation-differentiation. In 1888 he published a very important paper describing the diabase formation of the district of Olonetz in southern Karelia. This work opened up several fundamental petrological problems, including those of petrogenesis and of rock classification. His work in connexion with these problems brought him international repute and several of his papers appeared in Germany and Belgium. It was in 1890, when chemistry was becoming an important adjunct of petrological research, that Loewinson-Lessing published his scheme of chemical classification of igneous rocks, in which he introduced a new form of magmatic formulae.

The following decade was one of intensive activity. Apart from petrological works he published several papers on soil science, mineralogy, geology and palaeontology. In 1891 appeared his *Tables for the determination of rock-forming minerals* (English translation, 1893) and in 1894 his *Petrographisches Lexicon* (French edition, 1901, and a revised Russian edition, 1933). During the same period Loewinson-Lessing started on his explorations of the volcanic rocks of the central Caucasus. During the VII International Geological Congress, held in Russia in 1897, Loewinson-Lessing led an excursion to this interesting region. The first results of this work were published in the memoirs of the Congress and with them a very important theoretical discussion of petrogenesis and of the classification of igneous rocks (*Studien über die Eruptivgesteine, C.R. VII Congr. géol. intern., St. Pétersbourg, 1899*).

The Ural Mountains, with their immense variety of igneous rocks and ore-deposits, represent the next stage of his field work, but eventually this work extended over the greater part of those areas of the Russian Empire where igneous rocks could be found—Crimca, Siberia and even Kamchatka. Altogether Loewinson-Lessing is responsible for well over 200 publications, which include, besides petrology, works on geology, palaeontology, ore-deposits, experimental petrology, mineralogy and crystallography. In 1911 he published his *Text-book of Crystallography*, in 1923 his *Introduction to Geology* and also a very extensive work dealing with the history of petrology in Russia, a work which gave, for the first time, an outline of the regional petrology of Russia. His idea of a systematic petrographical survey of Russia was realized by the formation in 1925 of the Petrographical Institute, of which he was the founder and first director. Under his able guidance this Institute has produced a series of monographs and papers. In 1925 Loewinson-Lessing published a very good text-book of petrology and in 1936 a history of petrology (an English translation of which is forthcoming), a book in which he sums up his views on petrology and petrogenesis.

Although Loewinson-Lessing was not the pioneer petrologist in Russia, he was the most prominent one and his work was well known outside the confines of his native country. He, in company with Rosenbusch, Brögger, Harker and Lacroix, belongs to the great age of petrology and his work had a considerable influence on the development of this science.

As a teacher Loewinson-Lessing was excellent. Kind, helpful, understanding, unselfish, he not only instructed his students but inspired them with a devotion to science and made them his lifelong friends and followers. Like many other scientists he had his pet hypotheses but he never imposed them on his students and always encouraged a critical attitude. Loewinson-Lessing's fame will live not only in his printed work but in the memory of his numerous friends, colleagues and pupils, among whom the writer is proud to be included.

S. I. T.

Dr. FUZÉBIO PAULO DE OLIVEIRA, who was elected a Foreign Correspondent in 1935, made important contributions to our knowledge of the economic geology of Brazil. He was born at Areado, Abeté, Minas Geraes, on 14 August, 1882, and died at his home in Copacabana, Rio de Janeiro, on 12 October, 1939. After graduating as a mining and civil engineer at the School of Mines in Ouro Preto, he was appointed in 1906 engineer to the Coal Commission of Brazil which was presided over by Dr. I. C. White. In 1910 he joined the Geological and Mineralogical Service of Brazil as an assistant, and in 1913 he