

advantage of the free use of laboratories and special professorial lectures. Our artillery will then be able to throw off the badge of second class and claim to take the rank of first class again.

A cadet military college can only carry on the initial stage of the education of the artillery officer, and for that it is better for him not to be isolated too early from the other military branches. Many a scheme for the amalgamation of the military colleges will be found pigeon-holed in the War Office, awaiting the pressure required to be exerted on the opportunist. The artillery could then make its selection from the whole list of Army candidates, and with proper prestige secure the pick of the bunch. It would not then have to submit, as at present, to put up with the leavings of the Royal Engineers, and to be branded as second class.

The pick of the officers, after some military service, would be selected for a further course at our equivalent of the Berlin Military Technical Academy, where neither indolence nor apathy was tolerated, but stigmatised as bad form, so I was informed. Here they would find a standard of uni-

versity rank, in a centre of keen intellectual activity.

But the atmosphere of all Woolwich is close and ill-ventilated. Throw open the window, and let in air and light! The Royal Military Academy there is unhealthy, physically as well as mentally, seated on the safety-valve of the main drainage of all South London. The buildings are antiquated and worn-out, fit only to be mined and blown up at the moon, and then a more healthy atmosphere, physical and intellectual, might be formed. With the solidarity of any other trade union, Woolwich strongly opposed dilution. But Dilution proved the best material, and carried the war to a successful conclusion, and so the insidious efforts at his elimination in peace must be watched carefully, and countered by a plentiful entry of university candidates from the outside.

The country will never cease to shiver at the recollection of our narrow escape from defeat and utter ruin, and will listen to no specious political views of opportunist economy likely to place us again in a state of military inferiority.

Obituary.

DR. RUDOLPH MESSEL, F.R.S.

DR. R. MESSEL died on Sunday, April 18, in his seventy-third year. Death came to him as a happy release but to a large circle of friends familiar with his social qualities and many acts of unostentatious generosity the loss is severe and will be deeply mourned. He had long been one of the most notable of our chemical manufacturers as pioneer founder of a most important industry, for he was the first to produce sulphuric anhydride from its elements on a large scale.

Messel was born in Darmstadt and came to this country, at the conclusion of his university career, shortly before the Franco-Prussian War; when this broke out he returned to Germany and volunteered for service but owing to a physical disability, I believe, he was drafted into the Army Service Corps and was wounded while on ambulance duty. He lost no time in returning to England and became assistant to the late Dr. Squire, a man of considerable ability and originality. Messel had qualified at Tübingen as a chemist under Strecker, who naturally took an interest in the then infant alizarin industry, as he had worked with alizarin. Strecker foresaw the important part that fuming sulphuric acid was to play in the industry and directed Messel's attention to the fact, suggesting that he might well seek to supply the want. Messel, therefore, was fully conversant with what had been done and when Squire, possessed of the same idea as Strecker, suggested to his assistant that he should set to work on the subject, he was soon ready with a process, having at once resorted

to the use of platinum as a catalyst in order to bring about the interaction of sulphur dioxide with atmospheric oxygen.

A patent was taken out by Squire in 1875 and he and Messel described their process in a paper read to the Chemical Society early in 1876; but this was not published. Their works were erected at Silvertown, on the Thames; the manufacturing process was rapidly developed through Messel's skill and intense devotion to his task. Not alone were English wants soon met but a considerable quantity of the acid was supplied to the German colour-makers. The Badische Anilin- & Soda-Fabrik was led largely to develop the manufacture of the acid in connection with the production of synthetic indigotin; but the "splash" this firm made in 1900, when it published the results of its experiments in considerable detail, was unwarranted. Practically everything essential then put forward had long been a matter of everyday practice with Messel. Had not commercial considerations prevailed, he might well have upset the patents; but he was ever a man of peace, as well as a modest man, so he made no attempt to claim the credit that was his due. He acquired the German patents at a peppercorn price but his former countrymen never had the honesty to do him public justice.

The writer was a frequent visitor at Silvertown in early days and was always impressed by the remarkably systematic manner in which the works were operated. Messel was ever on the look-out for improvements and ever ready to make them. His chief trial in later years was the difficulty he experienced in persuading his conservative British

partners to consent to the scrapping of inefficient plant and the substitution of improved appliances. A man of great energy, he was ready at all times to work twenty-five hours a day for several days together. He long lived on the works in the most modest quarters and his all-seeing eyes were everywhere. In Germany the success of the great chemical works has been mainly due to the effective co-operation of a variety of workers, representing the different sides of the business, supported by a small army of highly disciplined, qualified scientific assistants; but Messel did everything himself: his versatility was astounding; he was not only chemist but also engineer, works manager and business man; he had no scientific staff but only an assistant or two.

Though a German but a German fired with Jewish imagination, Messel appreciated and practised English methods. Aided only by the most modest resources, he long held his place successfully against his rivals in Germany. Probably much of his early success was due to his sympathetic attitude towards his workmen, by whom he was generally beloved; but Messel was not only a worker, he also played hard. In great social request, he knew everyone: Gilbert was one of his great friends. Of late years Messel had been one of the most familiar and popular figures at the Savage Club.

Messel's eminent scientific services to industry were recognised in 1912 by his election into the Royal Society. No other compliment could have given him greater satisfaction. Though a manufacturer, he lived for science and in the atmosphere of science and not the least of his merits is the example he has thus set. H. E. A.

PROF. A. K. HUNTINGTON.

By the regretted death, on April 17, at sixty-four years of age, of Prof. Alfred Kirby Huntington so shortly after relinquishing the chair of metallurgy at King's College, University of London, which he had occupied since 1879, British technical science loses one of its old guard, and both metallurgy and aviation are the poorer by the loss of an indefatigable worker and an outstanding personality.

Though it be admitted that Prof. Huntington's name is linked with no spectacular discovery, his work, beyond its professional duties, was continuous, scholarly, and of marked originality. In both respects he therefore exercised a determinative moulding influence upon the two generations of men he trained in this rapidly widening field of science. His career, indeed, coincided with what we may justly regard as the Renaissance of non-ferrous metallurgy. For nearly forty years he was invariably abreast, more usually in the forefront, of the many new departures which have marked it. A physicist as well as a chemist, his researches on the micro-structure of metals and on "corrosion" have added essentially to our metallographic knowledge; his paper on "The

Concentration of Metalliferous Sulphides by Flotation," read before the Faraday Society in 1905, broke ground which has been gratefully cultivated by others, and provided the starting-point for fresh researches; whilst in the discussion of such diverse technics as those of copper-smelting, cyanidation, nickel metallurgy, etc., many have owed essential enlightenment to his suggestions and criticisms, imparted with a kindly, if somewhat gruff, sententiousness.

Prof. Huntington rendered yeoman service in the earlier development of several of our now important technical associations; thus one recalls his two papers (upon "The Mexican Amalgamation Process" and "The Metallurgy of Nickel and Cobalt") which were read at the first annual meeting of the Society of Chemical Industry in 1882. Later he was actively interested in the formation of the Institution of Mining and Metallurgy, becoming its second president in 1894, and remaining an honoured member of council until his death. The mere enumeration of his contributions to its Transactions occupies a whole page of index. In 1913 he succeeded to the presidential chair of the Institute of Metals, and to that society he gave of his energy and experience with equal freedom. During the war his specialised knowledge of high explosives was placed at the disposal of, and fully utilised by, the Admiralty.

A marked characteristic of Prof. Huntington's metallurgical outlook was its practicality and its constant insistence upon the economic aspect of the problem under consideration. His motto might seem to have been: "First write your equation in economics, and the remaining 20 per cent. of technics will be easily and better supplied thereafter"—though it must be admitted that he could be unsparing if that balance appeared faulty!

Prof. Huntington's intense practical interest in aeronautics, which advancing years were powerless to quench (since, in addition to his exploits in ballooning, he was until quite recently his own pilot and flew his own plane), made him famous to a wide circle; but it is to his services to modern metallurgy that special tribute is due.

DR. A. J. CHALMERS.

THE death of Dr. A. J. Chalmers in Calcutta on April 5 causes a gap in the ranks of British workers in tropical medicine, and will also be deeply regretted by his many friends in this country, as well as in the various Colonies in which he held important posts. The son of a Wesleyan minister, Dr. Chalmers was born in London in 1870, but began his career at University College, Liverpool, which at that time formed part of Victoria University. His career in the Medical School during his student days was brilliant, and it was soon apparent that he had a bright future before him. He gained the Holt fellowship of his college in 1890 and 1891, and obtained honours on taking his degree as M.D. Soon after