The Transactions of the American Institute of Chemical Engineers. Vol. iv., 1911. Pp. iv+514. (New York: D. Van Nostrand and Co.; London: E. and F. N. Spon, Ltd., 1912.) Price 30*s.* net.

Two addresses delivered by the president, Dr. F. W. Frerichs, at Chicago and Washington are chiefly devoted to descriptions of six problems in chemical engineering practice. One of these, the extraction of bismuth from carbonaceous ores, consists of a complete account of the recovery of this metal from ores containing 1 oz. of lead, 15 oz. of silver 5 per cent. lead, and 5 per cent. of bismuth. The metal can be produced greatly in excess of the consumption, which in 1910 was about 200,000 lb for the United States. It is used almost exclusively for medicinal purposes.

Mr. Clarence Hall, explosives engineer, United States Bureau of Mines, contributes an interesting paper on explosives used in engineering and mining operations. The apparatus used at the Pittsburg testing station for the determination of the relative energy and efficiency of various explosives, such as black powder, granulated nitroglycerine powders, and nitro-glycerine and ammonia dynamites, is described. Mettegang's recorder for determining the rate of detonation is used, and velocities of detonation up to 6246 metres per second have been found for 60 per cent. nitroglycerine dynamites. The recorder has a soot-covered bronze drum 500 mm. in circumference which can be driven up to 105 revolutions per second, and marks are made thereon by electrical contact devices.

The manufacture of gelatine is described by Mr. Ludwig A. Thiele. The raw materials are bones, from which osseine is derived, and hide-stock. The process is the same for the osseine and hidestock, the former being got from the bones by treatment with either hydrochloric, phosphoric, or sulphurous acid, during which process a valuable by-product, acid phosphate, is produced. A report of the Committee on Chemical Engineering Education is included in the volume, together with other papers on manufacturing processes.

Science French Course. By C. W. Paget Moffatt. Pp. x+305. (London: W. B. Clive, University Tutorial Press, Ltd., 1912.) Price 3*s.* 6*d.*

THE object of this book is, the author says, to provide students of science who desire to read French scientific literature with the necessary minimum of French grammar, and a selection of extracts from which some practice may be obtained. For students with no knowledge of French at all the amount of assistance given in translation appears rather inadequate, but for those who have forgotten what was learnt at school and wish to revise rapidly, the book should prove of great assistance. The extracts will form excellent reading in French for boys and girls in the upper forms of secondary schools who are taking a course of work in science.

LETTERS TO THE EDITOR.

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of* NATURE. *No notice is taken of anonymous communications.*]

The Synthesis of Matter.

IN the issue of NATURE for July 18 last, there appears an important letter from Sir William Ramsay dealing with the appearance of hydrogen, helium, and neon in the glass of exhausted X-ray bulbs. This result is of great interest, and may have an important bearing in addition to that mentioned by the author.

It is well known that X-ray bulbs only possess a limited period of life and go "soft," as it is termed, as if a small amount of gas previously adsorbed by the glass had been set free. The thought occurred to me some time ago that the softening might not be due to this cause, but to rare gases, such as helium, actinium, &c., produced from the æther of the vacuum becoming charged with energy from the kathode. It is such gases which are found in the process known as inorganic evolution in the hottest stars and nebulæ, and discovered there first by Lockyer, before their terrestrial occurrence in cleveite and elsewhere was detected by Ramsay.

If elements can decompose with evolution of energy as in radio-activity, it would seem not impossible that matter might be synthetised with absorption of energy, and that a first stage in such a process might be the formation of electrons by the charging of æther with a permanent form of energy, followed by a synthesis of ordinary matter in which such gases as helium would be a first product.

Attempts were made by me at the time to obtain evidences of helium from exhausted X-ray bulbs, but failed, as I now believe, from the small quantity of gas available and my lack of training in this very specialised field of manipulation. It would be interesting to carry out a prolonged experiment with an X-ray bulb run for days, and pumped out at intervals, in order to ascertain whether such development of helium took place.

It is, of course, possible that any gas so arising might come from the electrodes and glass undergoing atomic disintegration, but the possible origin of matter from æther when there is an available supply of energy at high potential should not be lost sight of. Theory suggests that such a formation is possible, if matter consists of vortex rings or other permanent forms of periodic movement of the æther, and it may be that in the chromosphere spectra there is evidence of production of matter occurring at the present time.

BENJAMIN MOORE.
The Bio-Chemical Department, the University, Liverpool, October 9.

The Jaw from the Stalagmite in Kent's Cavern.

I AM much obliged to Prof. Keith for his reply to my letter on the Kent's Cavern jaw, from the granular stalagmite. As my friend Prof. Boyd Dawkins, who read the paper, was a member of the Kent's Cavern Committee, and reported in 1869 on the fossils found up to that date, I naturally took for granted that all the facts of the case would be before Section H, and that Prof. Keith was challenging the evidence.