An expression of this kind, far from being an "eccentricity," is a triumph of nomenclature. It *is* possible to mould language by logic; it is the only way to mould language that shall be truly scientific. It is this method which has given such power of expression to the French language, not only in its magnificent modern prose, but more especially in its incomparable clearness when used for the exposition of science. Though our own language is somewhat less pliant, we cannot do better than imitate our more logical and enterprising neighbours in replacing confusing or ambiguous language by clear and rational terminology. ALBERT CAMPBELL.

Teddington, June 19.

Training for Scientific Research.

I SHOULD like to say in regard to my letter on the above subject in NATURE of June 17, that, owing to exceptional circumstances, I had not read Prof. W. H. Perkin's presidential address to the Chemical Society which appeared in the Journal of the society for April, in which he makes precisely similar suggestions. This was unknown to me at the time of writing, and naturally I am very glad to find myself in agreement with so influential an authority. I can only add my hope that he, furnished with all the qualifications for the task, will succeed in persuading the universities to a reform upon which so much depends, and for which the time is favourable. T. S. PATTERSON.

Organic Chemistry Department, University of Glasgow, June 20.

Extinguishing Fires.

IN reference to Sir W. A. Tilden's article in NATURE of June 10, may I direct attention to the fact that an ordinary syphon of "soda-water" is a very effective fire-extinguisher if used in the early stages of an outbreak due to bombs, etc., and it is a wise precaution to keep a supply, of the larger size, in readiness.

A small piece of rubber tubing may be slipped over the nozzle in order to direct the discharge, or the syphon may be inverted whilst held in the hands.

C. CARUS-WILSON.

June 14.

THE SYNTHETIC PRODUCTION OF NITRIC ACID.

THE recent pronouncement of the German Chancellor, and the statements which have appeared from time to time in the daily Press and in technical journals, respecting the enormous extension in the methods of transforming atmospheric nitrogen into ammonia and nitric acid, which are claimed to have been developed by German chemical engineers, have attracted such widespread attention at the present time on account of the necessary employment of this acid in the manufacture of explosives, that it may not be uninteresting to explain shortly, and in general terms, the main principles of the methods by which such transformation is effected. The actual details of the manufacturing processes now employed in Germany have not been published, and are not likely to be made known for some time to come. But there is little doubt that these processes are, in the main, merely extensions or refinements of methods already established, and in more or less successful operation, at Odda, Notodden, and Christiansand in Norway, at Legnano, near Milan, at La Roche-de-Dame, in the south of France, and at Niagara Falls. Even before the outbreak of the war, factories for the utilisation of atmospheric nitrogen in the manufacture of synthetic ammonia and nitric acid were at work in Westphalia, at Knapsack, near Cologne, at Spandau, and in one or two places in Austria-Hungary. Similar works have been erected, or are in course of erection, in the United States, Switzerland, and Japan.

Although a considerable amount of British capital has been invested in Norwegian enterprises, no attempts have hitherto been made in Great Britain to utilise the vast stores of potentially combined nitrogen which exist in the air. It has been calculated that the air over a dozen acres contains as much potential nitric acid as is annually exported in the form of Chile saltpetre. The apparent apathy of the British manufacturer is probably due to the circumstance that hitherto we have not suffered to any appreciable extent from any shortage of nitrates or nitric acid, and that, so long as we have command of the sea, we are not likely to suffer for some time to come. But it must not be forgotten that the supply of Chile saltpetre is not inexhaustible. The rich deposits of Tarapaca are already worked out, and what is now obtained from the more inaccessible districts of Antofagasta, Toco, and Taltal is of much lower quality. On the other hand, we gather from the Chancellor's statement in the Reichstag that the new industry in Germany is to be protected for at least a number of years, which would seem to imply that the manufacture cannot be worked on ordinary commercial lines. The probable effect of protection would be to limit, if not altogether to destroy, the importation of Chile saltpetre into Germany, and thereby to diminish its price to us unless German syndicates manage to obtain control of the workings.

Another reason for the apparent lack of enterprise on the part of the British chemical manufacturer is the assumption that hitherto the commercially successful working of all such synthetic processes would seem to depend upon cheap water-power, of which this country has no very ample store. But it may be doubted whether this disadvantage is altogether insuperable, at least under certain conditions. At all events, it is certain that the German engineers have to look to other sources of energy. What will be the ultimate effect on the price of nitric acid remains to be seen. In the meantime, it is probable that its present cost to Germany is far higher than to us.

The new methods of making nitric acid from atmospheric nitrogen are twofold in character; either direct, that is, by the direct combination of nitrogen and oxygen, or indirectly through the intermediate production and subsequent combustion of ammonia. The direct formation of ammonia by the union of its elements, nitrogen and hydrogen, has frequently been attempted, but hitherto with very limited success. It has long