fascinating hypotheses which later proved to be baseless.

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British Laboratory and Scientific Glassware.

THE question of the manufacture of laboratory and scientific glassware in this country is now receiving the attention of the House of Commons, together with other key industries. This matter has been the subject of considerable correspondence in NATURE, and I feel that readers of this journal will be interested to know what progress has been made in this work.

The advance made in the manufacture of laboratory and scientific glassware in Great Britain during the last five years is not only remarkable, but is also a monument to the capacity and ability of the British scientific worker. It is unnecessary to point out here the importance and necessity of scientific work or of the vessels and instruments that men of science use. That the latter must be of the finest quality and manufacture is indisputable.

At the outbreak of war men of science were absolutely dependent on supplies of German glass. They realised the danger, and at once stepped into the breach that the British manufacturer, unaided, was unable to fill. As a result of their efforts we now have the nucleus of a considerable industry in this country. While the supply is not yet equal to the demand, rapid progress has been, and is being, made.

Men of science are always critical of one another's work, and the production of these laboratory glasses has naturally led other workers to test and compare their properties with those of German and other makes. These results have been published in purely technical journals, but I feel that they have not yet had the publicity given to them that they deserve. The results of these tests are really remarkable, and prove quite conclusively that, in spite of the short time that the industry has been established, British laboratory glassware is the finest in the world. The results have never been challenged in any way, and go to show that the widely and cleverly advertised properties of German glassware are not quite so good as they have been made to appear, and that the British manufacturer has not merely equalled their best, but surpassed it.

The reports of the series of tests referred to are contained in the Journal of the Society of Glass Technology, the references being as follows:—Vol. i., p. 153: "The Attack of Chemical Reagents on Glass Surfaces, and a Comparison of Different Types of Chemical Glassware." Vol. ii., p. 219: "The Resistant Properties of some Types of Foreign Chemical Glassware." Vol. iii., p. 129: "Further Investigations of Chemical Glassware." These researches have been carried out by a department of Sheffield University.

The glasses tested have been classified (vol. ii., p. 230) under the headings "Good," "Moderate," and "Bad," and include Jena glass, Greiner and Friedrich's "R," Koln Ehrenfeld's, Swedish, Italian, French, American, and British. Of these only seven (two German, two American, and three British) remain in the "Good" class in every test. The tests include the action of (1) boiling water, (2) boiling water under pressure (autoclave), (3) $2N$-NaOH, (4) $N/10$-NaOH, (5) $2N$-Na_2CO_3, and (6) boiling HCl.

The action of boiling water at atmospheric pressure is so small on all seven glasses as to be, in the opinion of the authors of these researches, within experimental error, and is, therefore, negligible for comparative purposes.

An analysis of the table of results referred to above shows that for the remaining five tests the order of merit of the various glasses for general use is as follows: (1) A British glass. (2) A German glass. (3) A British and an American glass. (4) An American and a German glass. (5) A British glass.

This result speaks for itself, and it should be added that neither of the two German glasses in this list is Jena glass, which was found to occupy a comparatively low position in the table of results.

One of the great troubles which the manufacturer has had to face was that he was making this extraordinary attempt, not in normal, but in abnormal, times, when the supplies of raw materials and trained and unskilled labour were not available. Men skilled in the difficult art of "blowing" were almost unobtainable, yet these difficulties were gradually overcome and continued improvements made, until to-day the best British chemical glass bears comparison, from every point of view, with the products of the rest of the world.

In the early days many complaints were urged regarding the quality of the finish. This was only to be expected. It is obvious that skilled labour cannot be trained in a day, but I have no hesitation in saying that the finish of the majority of the best British makes of resistant glass is now as good as, if not better than, that of German glass of comparable composition.

One feels that the British manufacturer has at times been blamed for producing an inferior article. Unbranded glass has often been sent to chemists as British ware, whereas all the best makes of British glass are stamped with the name of the firm making it.

Unfortunately, those who were patriotic enough to manufacture this glass during the war are in danger of losing the result of their labours. Your readers know the heavy cost of experimental and research work, and will naturally realise that the British manufacturer is extremely anxious lest the results of this work should be permanently lost to the country. It is for this reason that the British manufacturer asks that the Key Industries Bill should be passed as soon as possible, to enable him to train more labour and to place this industry on a permanent and satisfactory footing.

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The Behaviour of Time-Fuzes.

IT might appear that in my article on "The Behaviour of Time-Fuzes" in NATURE of October 14 I was describing my own researches. I wish to correct any impression of that kind. The original draft of my article was unsigned, but, unfortunately, I allowed the author's name (inserted by the Editor) to remain in the proof. The experiments described were made by a variety of people at Woolwich, at the National Physical Laboratory, at Cambridge, at University College, London, at Portsmouth, and elsewhere; and not least of the credit for the progress made in our knowledge of fuze-behaviour is due to certain officers of H.M. Army and Navy, on the Ordnance Committee, at the Ministry of Munitions, and at H.M.S. *Excellent*. My article, however, was intended not to apportion credit, certainly not to claim it, but to describe what I personally regard as the leading lines of development of a strange and interesting scientific by-product of the war.

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45 The Downs, Altrincham, Cheshire,
October 21.