the level of the crater floor, can be studied either from the same point of vantage, or else, at quite close quarters, after a scramble to the bottom of the crater by an easy path. On the floor of the crater there can also be studied the chemical changes produced in the lava by the action of hot gases forcing their way up from below, and typical specimens of the products can be readily collected.

These favourable conditions are likely to persist for the next two or three years at least. When, however, the 1906 crater has once been refilled, the activities of the mountain, though likely to become more awe-inspiring and formidable, will be less convenient for study than at present. Further, the presence in London of the admirable Johnston-Lavis Collection of Vesuvian specimens, maps and literature, now conveniently arranged and made accessible for study at University College, affords the English student a unique opportunity of making himself acquainted with the past history of the volcano, either before or after a visit to the locality itself.

In conclusion, it may be not out of place to mention that Messrs. Cook and Son, who work the Vesuvian railway, maintain a comfortable hotel immediately adjacent to the Observatory (Hotel Eremo), at which visitors who stay more than a day or two are received on very favourable " en pension " terms, and from which a large part of the mountain can be conveniently explored. ARTHUR HUTCHINSON.

The Mineralogical Laboratory,
Cambridge, January 25.

The Mathematical Tripos.

IN his address to the Mathematical Association, Prof. G. H. Hardy urged the desirability of abolishing the mathematical tripos at Cambridge. May I direct attention to the disastrous results to which such a step might lead in other directions.

New universities are springing up all over England, and they are vying with each other in trying to give as many honours degrees as possible. These are purely examination qualifications, and the professor or lecturer teaching the students has generally no voice in the question as to whether the candidates are to pass or fail. These universities are frequently too poor to be able to keep more than one overworked professor and assistant, who know that unless they can get a good show of " firsts," or even honours people of any class, they will be looked on with disfavour by their colleagues.

No amount of " getting up " questions likely to be " set " or " doing papers " or " working examples and getting the right answer " or " revision " will, however, produce a mathematician, though it may and often does discourage someone that might become one. To my mind the essential requirement for the training of real mathematicians is that they should have followed discourses of lectures given by a large number of real mathematicians, each a specialist in a particular branch of the subject. In my Cambridge days I acquired my mathematical knowledge from about a dozen lecturers, and I am not sure whether the number of qualified lecturers in mathematics (good, bad, and indifferent) runs into two or three figures. I was one myself until I was forced to find employment elsewhere.

Apart from Cambridge there are very few universities possessing a sufficient mathematical staff to qualify any student for an appointment above the standard of an inferior schoolmaster.

If, however, the tripos were abolished, the Cambridge mathematical school would lose the best chance it has of attracting the degree seekers and trying to ram a little decent and intelligent teaching into their over-crammed brains. Personally I should be very sorry if the word " Tripos," which by usage has become the registered trade mark of the University of Cambridge, were abolished. It is in my opinion very unfortunate that they voluntarily surrendered an even more valuable proprietary name in the trade mark " Senior Wrangler " when it was in their power to use this designation as the brand of the best mathematicians of the year, when tested by any method whatever, including research work, even if this test is more or less covered by the Smith's prizes.

Therefore let Cambridge consider seriously before taking any step that will reduce its power of keeping students away from the honours examinations at cheap and nasty new universities. G. H. BRYAN.

Plâs Gwyn, Bangor,
Carnarvonshire.

Domestic Lighting and Heating.

IN the issue of NATURE of December 19, p. 910, an account is given of a house, where heating, cooking, hot water, lighting and power are obtained solely from electric energy. The yearly bill is something like 43*l*. for a ten-roomed house, and, considering that a judicious selection of the several agents available for lighting and heating would perform the same office for less than half the cost, with only very little labour as an offset, but with considerably more comfort, it may be asked where the advantage of the " all-by-electricity " system lies. " There is nothing to do but to operate a tumbler switch." When this has been said, apparently all has been said, for there is nothing tempting in the complicated and costly installation described in Prof. S. Parker Smith's paper, nor in the denial involved by the abolition of the open coal fire (with its appalling waste and its bright cheerfulness !) and of the direct open window ventilation, barred, evidently, by the small supply of heat which can be derived from an electric fire. Unfortunately, these two features, open coal fires and open windows, are essential features of British comfort and British health, and few would shirk the trouble of laying a coal fire with their own hands to spend a long evening by, if the alternative was the simple operation of a switch, and the resulting cheerless glow ! I sincerely sympathise with any one who would follow the " simply-a-switch " lure and have but an electric fire to heat in winter a 14 × 22 feet room with a nice spacious window at each end admitting surreptitious draughts in proportion to the amount of light they let in.

The proper solution is not in the direction advocated by Prof. Parker Smith ; it is in adjusting one's way of living with the view of a combination of maximum comfort, minimum labour and minimum cost. It is found in the use of a " living room " with an open coal fire (which burns but one scuttleful of coal a day, and, when desired, can be made to last all night, thereby saving the trouble of laying it in the morning). This fire does not require a special domestic servant, nor would its abolition enable one to be dispensed with. A " Sentry " boiler burning small coke (about 2*s*. 6*d*. per week) heats the kitchen and supplies hot water ; it burns day and night for five or six weeks on end, requiring only a thorough raking morning and evening. The cooking is done by gas. In the warmer part of the year, hot water is obtained by means of geysers. The other rooms are heated by good gas fires which need but 15 to 20 minutes to bring an icy cold room 17 × 17 feet to a pleasant warmth. The lighting is done by electricity. The result is a comfort which it would not