CORRESPONDENCE.

To the Editor of the Mathematical Gazette.

DEAR SIR,—With reference to the question of the prospects of the mathematical specialist, the following note may be of interest:

For the mathematician with no other qualification there is no career except teaching, but for the mathematician with enough knowledge of other sciences to apply his analysis there is an enormous and ever-widening field. Such a man will find opportunity for using his knowledge at every turn. In a country like Egypt—practically a virgin field for science—opportunities are perhaps more frequent than at home, but the following fair sample of the work that crops up, taken from the correspondence on my office table this morning, may serve to illustrate the point. The following matters are all under consideration:

(i) Correlation between (vector) pressure gradient and (vector) wind velocity.
(ii) The possibility of applying mathematical analysis to a discussion of the statistics of plague in Upper Egypt.
(iii) The equations of motion of a current meter
(iv) An analysis of the effect of Lake Victoria Nyanza on Lake Albert.
(v) Seepage from artificial channels.

These are all questions of a practical nature, and they keep one's interest in mathematics very much alive.

Experience going back over seventeen years of application of mathematics shows that it is not so much the actual facts learned as the point of view—to quote another summary, not so much the 'content' as the 'discipline.' Of all the mathematical tools, perhaps none is more useful than 'Taylor's Theorem' in the widest sense of the term, and this arises, I think, from the nature of the application of mathematics. We never deal with *plane* surfaces, with *perfect* fluids, with *rigid* bodies, with *perfectly elastic* bodies, with *smooth* surfaces and so on, but all these are approximations to physical entities. Everywhere we are seeking in our applied mathematics an approximation, and methods of successive approximation become useful tools. From another point of view, in much of our work we are looking for functional relationships, and the field of our experience is limited. This being so, the first step is to assume that the function we are looking for is capable of expansion, and the chief terms are those of the first order. In many cases, no doubt—for example, the relation between wind pressure and velocity; the expression of the discharge of a river in terms of the reading of a river-gauge, and so on—the relationship is not linear, but these are the exceptions, at least to the approximation warranted by the extent of our field of experience.

The question arises whether it is better to learn mathematics first and the bases of the other sciences after, or to reverse the order and pick up the necessary mathematics as required. As the result of experience and observation, I have no hesitation in declaring for the former, with the proviso always that there are exceptions to this as to most generalisations. Mathematics for its study demands time and application that can be given only with difficulty in the stress of every-day work, and in the result the necessary mathematics is not required. On the other hand, it is easier to take up and, for the time at least, master the details of the special subject under study sufficiently to apply mathematics to it. Where a deeper knowledge is necessary the services of the specialist must be called in, and then the study becomes a co-operative one.—Yours truly,

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Director, Meteorological Service.