

machines to solve new problems. Other topics I would like to mention include determinants and matrices, vectors, and Fourier series and integrals.

In conclusion, Sir, may I wish the Mathematical Association all good luck in its efforts to improve the understanding of technical mathematics at all levels. Yours sincerely,

P. J. WALLIS.

AN OLD PROBLEM.

To the Editor of the *Mathematical Gazette*.

SIR,—I have been interested lately by the old unsolved problem of placing n points in m straight lines of p in a line, so that m is a maximum. I should be grateful if any members could inform me of the literature on the subject: I believe both Newton and Sylvester studied it.

It might interest some of your readers to try their hands at the following selection of possibilities, to each of which I have at least one solution. The numbers are the values of p , n , and m , in that order. 3, 11, 16; 3, 12, 19; 4, 18, 18; 4, 24, 28; 4, 25, 30; 4, 36, 55; 5, 22, 15; 5, 26, 21; 5, 30, 26.

The question originally proposed was to find n_0 , the minimum value of n for which $m \geq n$ for any value of p . When $p=3$, $n_0=9$, and when $p=4$, $n_0=18$, so it is tempting to guess that when $p=5$, $n_0=36$ and, in general, $n_0=9 \cdot 2^{p-3}$, but I have not so far found such a solution even for $p=5$.

Yours,

R. H. MACMILLAN.

SIXTH FORM SYLLABUSES

To the Editor of the *Mathematical Gazette*.

SIR,—There is temerity in commenting at a distance on the discussion about Sixth Form syllabuses recorded in the *Mathematical Gazette* for October, especially as the clearly valuable report on the training of physicists is not available here, nor are the Cambridge Entrance Scholarship papers which are so highly praised. But our experience for a score of years with Descriptive Mathematics appears to be relevant, and some attempt may be made to state its significance for the changing situation in England.

The discussion concerned two subjects which are well and clearly distinguished, the mathematical preparation best for various future courses of study, and that for winning scholarships with a view to the study of mathematics. Only to the former can I refer, though I note no reference to the consequences of concentration on scholarship work for those who fail to get a scholarship, and though I gather from the constitution of the Joint Advisory Committee the impression that University representation is rather strong. About this I feel that teachers should have clearer views as to aims in teaching which are not too directly linked to the study of advanced mathematics; University teachers can keep in touch with such aims, and help to determine them, but for this they need not have great voting strength on committees.

First, I note too little emphasis, notwithstanding the prominence given to Statistics and the mention of actuarial mathematics, on the uses of mathematics in connection with the social sciences. Not forgetting Marshall's warnings, it may be said that these uses are specially urgent now in regard to Economics. (An example of fumbling may be easily seen at p. 285 of *Employment, Interest and Money*.*) We need a committee or group of

* More positively, there is the apparent fact that *Econometrica* flourishes in the U.S.A., and it is doubtful if it is appreciated as generally in England.

teachers of mathematics to search the writings on the social sciences and see in how great a degree incisive study of these sciences is lacking owing to unfamiliarity with certain types of what might be school mathematics. A group is needed, too, to deal similarly with Biology, and probably another group for the exact sciences, though these almost monopolised attention in the discussion on the need to make school mathematics more applicable. These are large tasks, but there is no escaping them if among the educated in days to come there is to be a critical and a constructive attitude in any degree adequate to the complexities of the times.

The above may seem to lack in consideration for the cultivation of advanced mathematics, and so I hasten to add that we have found the contrast that is common between pure and applied mathematics rather unreal. It may be that I use "applied" here in a wide sense, but this fits in with the demand from the universities, as well as from girls' schools, for more unification. I should like, too, to see our experience confirmed that such unification does not conflict with the possibility of dealing within a comparatively simple framework with a large variety of topics rather than with a few thoroughly, which is a desideratum for technical mathematics. It seems to me that it is desirable in the immediate future to make a more searching scrutiny of the details of mathematics that suit the types of pupils which have been already so well demarcated—though there is a type that needs, and does not know that it needs, mathematics of a certain kind. Of such may have come those scholars who protest now against mathematical over-elaboration, while the real difficulty is that mathematics has not been used with discrimination. For this we teachers may be responsible because we have not looked around enough.

JOHN MACLEAN

1488. Les théories générales, pour prendre dans la Science un droit de cité définitif, ont le plus souvent besoin de s'illustrer par des applications particulières. Dans plusieurs domaines, celles-ci ne sont pas toujours faciles à trouver, et l'on pourrait citer, dans les Mathématiques modernes, plus d'une théorie confinée, si j'ose le dire, dans sa trop grande généralité.—C. E. Picard, in his introduction to the *Œuvres de Galois*, 1897. [Per Prof. E. H. Neville.]

1489. *Detective Logic.* If I may venture a suggestion, you appear to attach too much importance to the actual inmates of the house. Your line of reasoning is that they had the best opportunity of entering the study. That is certainly true. But do not forget that others had an equal opportunity.—John Rhode, *Poison for One*, 1934, p. 130. [Per Professor E. H. Neville.]

1490. If he borrowed from Sir Isaac Newton the sublime method of fluxions, Leibnitz was at least the Prometheus who imparted to mankind the sacred fire which he had stolen from the gods.—Gibbon, "Antiquities of the House of Brunswick," Ch. 1, Sect. 1 (*Misc. Works*, 1814 ed., III, 362). [Per Professor E. H. Neville.]

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