I first solved the problem by hand, using sliding pieces of paper to cover the 100 possible relations between the d's and the s's, and 3 sets of necessary but not sufficient conditions on the s's to eliminate all but a few of the 1200 possibilities. The mechanics of this took about two hours. I later programmed the College Elliott 4120 computer to solve the problem by dealing in turn with all 1200 possibilities. This takes the machine a few minutes.

2. Of the questions posed in the general problem, only (a) is of any interest; (b) and (c) call for thousands of formulae which would be of no particular interest when found. Unfortunately the answer to (a) seems to require a great part of the answer to (b). Thus one might use an algebraic computer to write down the 1200 sets of 5 conditions on the d's which ensure the existence of at least one solution. Comparing these sets of conditions in pairs (or preferably, to begin with, in pairs of groups) one might arrive at conditions for two or more solutions, and so on, until the upper bound N to the number of solutions was found.

I have constructed an example of data with 5 solutions, namely 6, 7, 8, 9 10, 10, 11, 11, 12, 13 with the solutions 1, 4, 5, 6, 7; 2, 4, 5, 6, 6; 2, 4, 5, 6, 7; 2, 4, 5, 6, 8; and 3, 4, 5, 6, 7.

Lecturer in Mathematics, F. O'Hara
Kingston College of Technology,
Kingston-upon-Thames.

CORRESPONDENCE

FRANK NEWMAN

To the Editor, *The Mathematical Gazette*

Sir,

In the article on Frank Newman (*Math. Gazette*, December 1970) there is a footnote (p. 332) stating that I had not been able to find his name in any of the lists of members that I had consulted. Since then, however, I have discovered from the 16th Annual Report that he was elected an Honorary Member of the Association at the General Meeting on 17 January, 1890.

Yours faithfully,

9 Vanbrugh Hill, T. A. A. Broadbent
Blackheath, London S.E.3.

THE OLD SAXON FOOT

To the Editor, *The Mathematical Gazette*

Sir,

If in 1305 Edward I had retained the old Saxon foot (equal to 13·2 modern inches), which was, and still is, the basis of English land measure, and made the yard equal to three such feet, there would have been

https://doi.org/10.2307/3615035 Published online by Cambridge University Press

5 yards to a rod, instead of the awkward $5\frac{1}{2}$, and the yard would have been almost exactly equal to the metre. As things are, we still have, in land measure, the benefit of this lucky fluke, for a rod is almost exactly 5 metres (5·03) and a rood almost exactly one-tenth of a hectare (0·1012).

Yours faithfully,
E. H. LOCKWOOD

18 *West Hill*,
Charminster,
Dorchester,
Dorset.

REVIEWS

The Divine Proportion. A Study in Mathematical Beauty. By H. E. HUNTLEY. Pp. xii, 181. £1·25. 1970. (Dover, New York.)

From the title, one might expect a book about golden section and Fibonacci numbers. This it is, but the motivation is more general. Just as an interest in English poetry may be fostered by offering the adolescent *The Golden Treasury* or the *Oxford Book of English Verse*, so, Prof. Huntley believes, a mathematical anthology may present the learner "with objects of beauty for his appraisal". Since much of the beauty of mathematics depends not so much on results in isolation as on the patterns which they form, it was desirable to choose a central theme round which the book could be constructed. Golden section was a natural choice; anyone who fails to find here some addition to his knowledge of the elegance and diversity of results connected with golden section and Fibonacci numbers must be extremely erudite or extremely unlucky.

Introductory chapters explain to the young mathematician how and why he should develop an aesthetic appreciation of mathematics, and give a general account of the nature of aesthetic values, the pleasure and benefits to be derived therefrom. The emotional experiences are difficult to analyse. Music, Prof. Huntley says, has an incomparable power which may even bring a listener to tears; but this is a subjective judgement, and there are those for whom certain pasages of English prose and verse have this effect. I would suggest, with due diffidence, that the emotional appeal of the great mathematical works of creative art contains a strong sense of awe; if I may add to Huntley's several quotations from Wordsworth, we may well experience "thoughts that do often lie too deep for tears".

Those who knew Peter Fraser, that most lovable of mathematicians, described by Sir William Hodge as "one of those rare spirits one meets perhaps only once in a lifetime", will thank the author for preserving one anecdote. Peter, lecturing on cross-ratio, stops to contemplate the four rays of a pencil and a transversal, and murmurs, half to himself, "Och, a truly beautiful theorem. What simplicity. What economy. What elegance. ... Beautiful! ... Beautiful!" To this, the author owes his own enthusiasm for beauty in mathematics, and in turn his book should inspire equal enthusiasm in present-day students.

T. A. A. BROADBENT

9 *Vanbrugh Hill*,
Blackheath,
London S.E.3.