DEAR EDITOR,

I read the article on 'The Bible and Pi' with great interest. Some sixty years ago my former mathematics teacher, A. P. Rollett – later to become President of the Mathematical Association – suggested (I think rather light-heartedly) that perhaps the molten sea was not circular, but elliptical and that the perimeter was three times the length of the major axis.

If we assume this, and use the *approximate* formula

$$C = 2\pi\sqrt{\frac{a^2 + b^2}{2}} = 2\pi a\sqrt{\left(1 - \tfrac{1}{2}e^2\right)}$$

for the perimeter of an ellipse, we quickly obtain $e \approx 0.42$, which gives $b = 0.91a$, so that the dimensions are 10 cubits by 9.1 cubits.

It is, of course, no more than an interesting speculation: I have often wondered about it.

Yours sincerely,

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DEAR EDITOR,

Tony Gardiner's article in the July *Gazette* (p. 254) makes interesting but saddening reading. I am in full agreement with his criticisms and conclusions but for one point which I should like to take up: I consider that he is too harsh in his comments on questions based on the continuation of sequences. Of course one can be pedantic and insist that any sequence can be continued in infinitely many ways, but this is too negative an approach. Surely the ability to recognise a pattern, and to implement it, make use of it, and possibly confirm it by demonstration, is a basic mathematical skill.

To take an example I used to discuss with my 6th forms: let us look for square triangular numbers. A little experimenting will fairly soon produce 1, 36, 1225. The square roots of these (let us call them RST numbers) are 1, 6, 35. Now $1 = 1 \times 1$, $6 = 2 \times 3$, $35 = 5 \times 7$: we have little to go on as yet, but it is noteworthy that $2 = 1 + 1$, $3 = 1 + 2$, $5 = 2 + 3$, $7 = 2 + 5$; i.e. we can move from one RST number $a \times b$ in this sequence to the next by forming $(a + b)(2a + b)$. So let us try $(5 + 7) \times (10 + 7) = 12 \times 17 = 204$, and easily verify that this is indeed an RST number: and so on. On this basis one can construct a recurrence relation for 3 consecutive terms of the sequence, and ultimately an expression for the general term – but I am not concerned here with the details of this (if any reader is interested to follow it up they will be found in *Math. Gaz.* **56** (December 1972) p. 313: it is true that the investigator is not here a 'candidate guessing what is in the examiner's mind', but is nevertheless 'guessing' what is the underlying structure which one may reasonably assume the sequence to possess. Perhaps it is less reasonable to assume that the examiner's mind is governed by inexorable logic; but the principle is the same – if a pattern exists, can we spot it, and can we make use of it? To guess what is in the examiner's mind is 'not mathematics', says Tony: but we can easily get over this by wording the question differently: say, 'Consider the sequence . . . . : try to spot a simple rule by which the terms can be successively worked out, and use it (a) to calculate the next 2 terms, (b) to find and expression for the nth term, (c) . . . [and so on]'. My whole point is, quite simply, that the recognition of patterns is such an important aspect of practically all branches of mathematics that pupils should be made aware of this and encouraged to think on these lines at all levels. I am not alone in this view – see the final paragraph on p. 450 of the November *Gazette*.

Yours sincerely,

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DEAR EDITOR,

John Sharp [1] refers to the 5400 sequences in Sloane & Plouffe [2] and he goes on to tell us that Plouffe has developed an Intemet server called the Inverse Symbolic Calculator [3] which contains millions of constants (some 76 million by July 1998); [4] is an associated site. The encyclopedia itself has been made available on-line and is also being continually updated. As mentioned in [5] it was accessible initially via e-mail, but it has now been much improved and put on the Internet [6]. In July it contained about 40000 sequences with several being added daily. There are links to other interesting sites, in particular to the new electronic *Journal of Integer Sequences* [7]. The first paper in this journal is by Conway [8].

References

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3. Simon Plouffe, Inverse symbolic calculator, http://www.cecm.sfu.ca/projects/ISC/ISCmain.html
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6. N. J. A. Sloane, Sloane's on-line encyclopedia of integer sequences, http://www.research.att.com/~njas/sequences/
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Yours sincerely,

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