

Astronomical Society and associate who purchased six sets of Maksutov optics from them. (Sorry, gentlemen, I lost your names!)

Yours faithfully

Dudley Fuller

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THE DATE OF EASTER

Dear Sir

There have recently been some letters to the Editor on this subject^{1,2,3}. It has also been dealt with very neatly by Martin Gardener in *Scientific American* recently⁴. The T. H. O'Beirne solution is given in a form that can readily be programmed in BASIC for any computer or even for a hand-held programmable such as the Sharp PC 1211 or the Casio FX-702. A program is given below.

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100 REM DETERMINATION OF EASTER
110 REM T.H.O'BEIRNE (GLASGOW)
120 REM BULL. INST. MATH. VOL2 NO2 1966
130 INPUT "YEAR";Y
140 A=INT(((Y/19-INT(Y/19))*19)+.5)
150 B=INT(Y/100)
160 C=INT(((Y/100-INT(Y/100))*100)+.5)
170 D=INT(B/4)
180 E=INT(((B/4-INT(B/4))*4)+.5)
190 G=INT(((8*B)+13)/25)
200 J=B-D-G
210 IFY<1583THENJ=30
220 H1=INT(((11*J)-4)/30)
230 H2=INT(((7*A)+H1+6)/11)
240 HH=19*A+J+15-H2
250 H=INT(((HH/29-INT(HH/29))*29)+.5)
260 I=INT(C/4)
270 K=INT(((C/4-INT(C/4))*4)+.5)
280 LL=32+2*E+2*I-K-H
290 IFY<1583THENLL=34+B+2*I-H-K
300 L=INT(((LL/7-INT(LL/7))*7)+.5)
310 N=INT((90+H+L)/25)
320 PP=19+H+L+N
330 P=INT(((PP/32-INT(PP/32))*32)+.5)
340 PRINT,P

```

Another useful algorithm is Zeller's Congruence⁵ which is easy to program and to modify to give the Julian Day and the day of the week at any time. The subject is dealt with fully in reference 4.

Yours faithfully

D. A. A. Fagandini

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References

- 1 Day, G., *J. Brit. astron. Assoc.*, **88** (1), 91 (1977).
- 2 Fairweather, J. C., *ibid.*, **91** (3), 290 (1981).
- 3 Johsi, B. D. and Meisel, D. D., *ibid.*, **92** (1), 46 (1981).
- 4 Gardener, M., *Sci. Am.*, **244** (2), 14 (1981).
- 5 *Printout*, **2** (2), 45 (1981).

THE STAR OF BETHLEHEM

Dear Sir

Further to J. G. Porter's paper *Triple Conjunctions of the Planets*¹ I would draw members' attention to a paper by George Banos, Laboratory of Astronomy, University of Ioannina, Greece, entitled *Was the Star of Bethlehem the Planet Uranus*?² It is argued that Uranus was in Pisces in 6

BC and would have been visible to the naked eye as its magnitude varies between 5^m.7 and 6^m.1. At meridian passage Uranus was close to the zenith so it probably stood overhead.

The disappearance of the ‘star’ could have been due: “(a) to bad seeing, since Uranus was at the limit of visibility, (b) to the brightness of the Moon or (c) most probably, to the orbital motion of the Earth and the subsequent approach of Uranus to the Sun. The Magi were overjoyed when they observed the star again, because their early observations were confirmed.”

The conclusion drawn is that the Star of Bethlehem could have been the planet Uranus, discovered by the Magi almost 1800 years before Herschel. To quote again from the paper, "Why has the discovery been forgotten? Many answers could be given to this question: the difficulty of the observation in association with the decline of Babylonian astrology is, I think, the most evident reason."

Yours faithfully

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References

- 1 Porter, J. G., *J. Brit. astron. Assoc.*, **91**(6), 574 (1981).
2 Banos, G., *The Astronomy Quarterly*, **3**, 165 (1981).

SIMULTANEOUS DISPLAY OF SIDEREAL AND SOLAR TIME

Dear Sir

Sidereal time is related to the actual rotation period of the Earth with respect to the stars. Sidereal clocks run about $1/365$ faster than mean solar clocks and gain one whole day in a year.

The following scheme is a simple means of modifying the input pulse train of a 50 Hz digital clock integrated circuit so that it is advanced accurately by 4 parts in 1461 or about

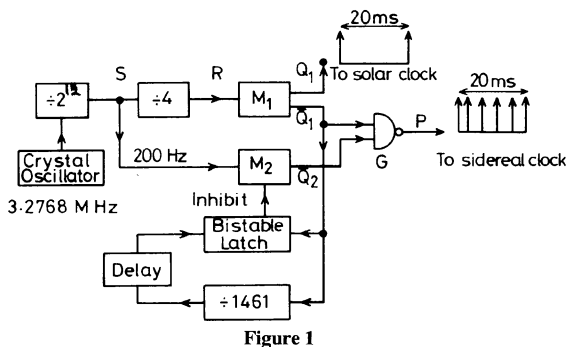


Figure 1

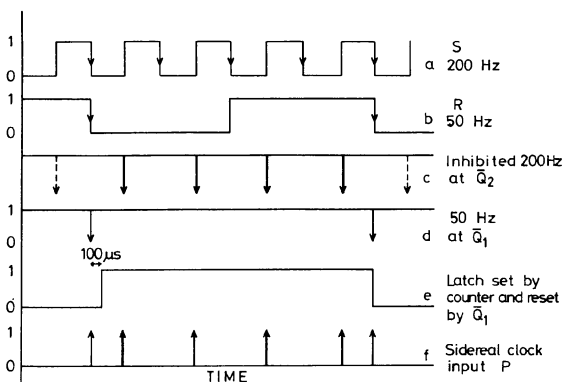


Figure 2