

הַיּוֹם בַּאֲשֶׁר קוֹמֵם יֵשׁוּעַ
הַמָּשִׁיחַ מִן־הַמָּתִים



**The Resurrection Day
Of Messiah Yeshua**

When It Happened

According To The Original
Texts

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(laid out in book order)

Appendix II: Ancient Lunar Visibility

INTRODUCTION

Lunar visibility depends on several factors, which can be simulated with astronomical software. I use my own program called “Calendar of Israel” and the program called “Cartes du Ciel” to double check it, which is a free desktop planetarium, and is better than most software you can buy for this purpose. The program uses the plan404 ephemeris, which is good from –3000 b.c. to 3000 a.d. and allows the user to set delta T. I have successfully pushed the limits of my own program to 4140 BC.

The first section assumes that the user has correctly set the time and place of observation, and it shows how to calculate if the new moon is visible. The second section shows how to set the time and location. The information is necessarily brief, and its purpose is to allow experienced astronomers confirm my calculations with independent third party sources.

VISIBILITY GIVEN TIME AND PLACE

Once the program is set to the right time and place. You need to obtain the following information:

AZ = Azimuth of the sun in degrees
AZ^s_m = Azimuth of the moon in degrees
AL^m = Altitude of the sun in degrees
AL^s = Altitude of the moon in degrees
D^m = Diameter of Moon in arc minutes

With these figures I calculate if the moon is visible using Maunder, Yallop, Bruin, and Indian criteria. Here are the mathematics needed for the four tests. Comments follow the //.

$$S_D = \frac{1}{2} D \quad // \quad 14 < S_D < 16 \quad ^{390}$$
$$\text{Arc of Vision} = \alpha = |AL_m - AL_s| \quad // \quad 3^\circ < \alpha < 35^\circ \quad ^{391}$$

³⁹⁰ The apparent diameter of the moon varies. The moon measures about 1/2 degree or 30 arc-minutes from edge to edge. Values around 15 are typical for the calculated semi-diameter (radius) of the moon.

³⁹¹ The range given are typical values. Always check to see if computations produce typical values. This is a check against arithmetical err. The arc of

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