

Records for Young Moon Sightings

*Bradley E. Schaefer**, *Imad A. Ahmad†* and *LeRoy Doggett‡*

*NASA/Goddard Space Flight Center, Code 661, Greenbelt, MD 20771, †Imad-ad-Dean Inc., 4323 Rosedale Ave, Bethesda, MD 20814 and ‡Nautical Almanac Office, U.S. Naval Observatory, Washington, D.C. 20390

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SUMMARY

We examine various claims of record and near record young moon sightings. We find that the claims for 1916 May 2, 1895 July 22, and 1910 February 10 were made under cloudy skies, hence the reports are likely to have an error in the date of observation. Similar problems with the reported date have occurred for the claimed sightings on 1885 December 11, 1989 May 5, and 1991 September 7. Other reports from 1989 May 5 are shown to have reported incorrectly the moon's position and orientation, and so the observed source was not the moon. Of the reliable reports, the record for sightings with the unaided eye is 15.4 h by Julius Schmidt, while the record for sightings with optical aid is 13 h 28 min by Robert C. Victor. We find that the reliable reports can be sharply distinguished from the dubious reports based on such factors as observer experience, promptness of report, and observer preparation.

The age of the youngest visible lunar crescent is of interest to historians of astronomy because of the efforts made by ancient cultures in observing and predicting the time of first visibility. It is of broader concern for historians who are interpreting historical events recorded on lunar calendars. It is of importance today because lunar calendars remain in current use. Indeed, even though various global lunar calendars have been proposed (e.g. Ilyas 1984, Ahmad 1990), the record age for crescent visibility is used for evaluating individual reports.

The record for a reliable sighting has widely been believed (e.g. Ashbrook 1971) to be 14.5 h, as set by four observers on 1916 May 2 (Whitmell 1916). Whitmell stated that the date was established by the occurrence of a Zeppelin raid over Yorkshire on the same night. However, we have found in *The [London] Times* from that year that over a hundred Zeppelin raids occurred before the report was published and the selected raid was the fourth in 10 days. Thus, the date of the observation cannot be chosen uniquely on the basis of the raid. For the particular attack on 1916 May 2, *The Times* headline was 'A raid in the rain', and they reported heavy rain over England at the time (*The Times* 1916). This is confirmed in books on the air war (e.g. Robinson 1971) and by the National Meteorological Library (Herrington 1990 private communication). Whitmell claims the time of the observation had perfect atmospheric conditions, a statement totally in contradiction to all other reports.

The record might then be claimed to be 14.75 h, as set by Mr Hoare on 1895 July 22 (Whitmell 1911c). We have checked with the National

Meteorological Library (Herrington 1990 private communication) for the weather conditions in and around Kent for the evening in question. All of southern England was either cloudy or rainy. In particular, of the three sites surrounding Faversham and within a thirty-mile distance, London and North Foreland were both reported cloudy while Dungeness reported rain.

The record age might then be claimed to be 16 h, as set by D.W.Horner on 1910 February 10 (Horner 1911, Whitmell 1911). We checked with the National Meteorological Library (Herrington 1990 private communication) for the weather conditions on that evening. Once again, all of southern England reported rainy and overcast skies. In particular, sites close to and surrounding Tunbridge Wells (London, Clacton-on-Sea, and Dungeness) all report rain. So for this observation, and the other two collected by Whitmell, the independent weather information that the whole area around the observing site was cloudy and/or raining makes us conclude that the reported date was incorrect (Table I).

The report of a young moon sighting on 1885 December 11 (Whitmell 1909) must also have an incorrect date, since the moon was new on 1885 December 6.

In modern times, difficulties with dates still occur. The photograph in Moore (1992) which purports to show a crescent 9 h before conjunction was actually taken 29 h before conjunction (Hedges 1992 private communication).

For the claimed record-breaking sighting (14 h 41 min) on 1989 May 5 from Mount Baldy, New Mexico (di Cicco 1989), the observation was actually made one lunation earlier (Shore 1990 private communication). This was later confirmed by examination of the observatory logs (Klinglesmith 1990 private communication). In this case, the confusion arose from a regrettable combination of miscommunication among four parties, arising in part because the report was made many months after the observation.

Durrani (1989, 1990) reports on the sighting of a 13-h 24-min old moon by two groups of observers in Houston, Texas on 1989 May 5. In this case, there can be no doubt that the date was correctly recorded. These 'record breaking sightings' were all made in a casual manner, in one case by a glance over the shoulder. This ease of 'breaking the record' is in stark contrast to the difficulty experienced by skilled observers near Houston (having left the city to avoid clouds that night), who, after much preparation, were only barely able to see the crescent for a few seconds even with binoculars (di Cicco 1989). The moon was claimed to be first spotted at times of 12 min and 8 min after sunset, when the sky is much too bright for visibility of even a thick crescent. The groups reported that the object was apparent to the naked eye for 14 and > 4 min, whereas other observers east of the Rockies saw the moon for only 27–150 sec and only with binoculars. The reported altitude of the object when first spotted was estimated to be 24° and 20° above the horizon, whereas the calculated altitude of the moon at the reported time of first sighting is 6° . The reported orientation of the crescent was from 2 to 8 p.m. and 2 to 7 p.m., whereas the orientation actually was from 5 to 11 p.m., so the reports are roughly 90° in error. In view of these contradictions, we must regretfully conclude that the Houston observations were most likely not of the lunar crescent.

TABLE I
The unreliable crescent moon reports

Reported date	Age of moon	Location	Observer	Reference	Delay in report	Comment
1885 Dec 11	26.8 h	Paris, France	Flammarrion	Whitmell 1909	...	NM on 1885 Dec 6
1895 Jul 22	14.75 h	Faversham, Kent	Hoare	Whitmell 1911	16 yr	Clouds/rain
1910 Feb 10	16 h	Tunbridge Wells, Kent	Horner	Horner 1911, Whitmell 1911	14 months	Rain
1916 May 2	14.5 h	Scarborough, N. Yorkshire	King +	Whitmell 1916	5 months	Rain
1989 May 5	13.4 h	Houston, Texas	Badat +	Durrani 1989, Durrani 1990	No delay	Reported wrong altitude, orientation, and duration
1989 May 5	14.85 h	Mount Baldy, New Mexico	Shore +	di Cicco 1989	4 months	Wrong date reported
1991 Sep 7	-9 h	Helston, Cornwall	Hedges	Moore 1992	4 months	Typographical error, age was -29 h

TABLE II
The reliable records

Reported date	Age of moon	Location	Observer	Reference	Delay in report	Comment
1871 Sep 14	-15.4 h	Athens Obs., Greece	Schmidt	Schaefer 1988	...	Record for unaided vision
1989 May 5	13.47 h	East Lansing, Michigan	Victor	di Cicco 1989	No delay	Seen only in binoculars
1989 May 5	13.67 h	Grand Rapids, Michigan	Hunefeld +	di Cicco 1989	No delay	Seen only in binoculars
1989 May 5	13.79 h	Lake Travis, Texas	Pearce +	di Cicco 1989	No delay	Seen only in binoculars
1990 May 24	15.53 h	Mount Wilson, California	O'Meara	Private communication	No delay	First seen in binoculars, then with unaided eye

So what is the record young moon? For the reliable sightings (see Table II), the record age for naked eye detection is still 15.4 h for Julius Schmidt, and for binocular observations is 13 h 28 min by Robert C. Victor.

We note that these records were all made by some of the most experienced visual observers in the world. Accounts of the superlative experience of Julius Schmidt, Stephen J. O'Meara, and Robert C. Victor are given in Ashbrook (1984), Schaefer (1988, 1990, and 1991), Green (1985), and di Cicco (1989). Similarly, the six observers in Michigan and Texas have good credentials as highly experienced observers, although their reputations have not been documented in the literature.

The reliable sightings were made after extensive preparation. In all of the twentieth-century cases, the observers used well-mounted telescopes or large binoculars to locate the moon, precalculated the exact position of the moon with respect to either Venus or the sunset position, and (except for Victor) travelled to a favourable site on a mountain.

The weather conditions for these records were neither excellent nor poor. O'Meara was observing from a clear sky on a mountain top above most low haze. Victor had substantial clouds overhead but it was clear in the west. The Michigan group had clear skies of average transparency. The Texas group had clear skies with very thin horizon haze. We have been unable to locate the weather conditions for Schmidt's observations after 1867 (cf. Schmidt 1868).

The dubious record claims are clearly distinguished from the reliable records by several means. Many of the dubious reports have independent weather information that shows the site was cloudy or rainy at the time of observation. The reliable records are usually critically examined promptly, while the dubious records are frequently reported long after the observation. There is also a strong distinction based on the experience and preparation of the observer.

REFERENCES

- Ahmad, I., 1990. *A Uniform Islamic Calendar for the Western Hemisphere*, Bethesda, Imad-ad-Dean.
- Ashbrook, J., 1971. *Sky & Telescope*, **42**, 78.
- Ashbrook, J., 1984. *Astronomical Scrapbook*, Sky Publishing, Cambridge, p. 251.
- di Cicco, D., 1989. *Sky & Telescope*, **78**, 322.
- Durrani, M.N., 1989. *J. R. astr. Soc. Canada*, **83**, 34.
- Durrani, M.N., 1990. *Sky & Telescope*, **79**, 582.
- Green, D.W.E., 1985. *Int. Comet Quart.*, **7**, 40.
- Horner, D.W., 1911. *Observatory*, **34**, pp. 162, 344.
- Ilyas, M., 1984. *Islamic Calendar, Times & Qibla*, Berita, Kuala Lumpur.
- Moore, P., 1992. *Astron. Now*, **6**, 34.
- Robinson, D.H., 1971. *The Zeppelin in Combat*, third ed., JWC Pub., Sun Valley, p. 142.
- Schaefer, B.E., 1988. *Q. J. R. astr. Soc.*, **29**, 511.
- Schaefer, B.E., 1990. *Publs astr. Soc. Pacific*, **102**, 212.
- Schaefer, B.E., 1991. *Publs astr. Soc. Pacific*, **103**, 645.
- Schmidt, J., 1868. *Astronomische Nachrichten*, **71**, 201.
- The Times* [London], 1916 May 3, p. 8.
- Whitmell, C.T., 1909. *J. Brit. astr. Assoc.*, **19**, 254.
- Whitmell, C.T., 1911. *Observatory*, **34**, pp. 203, 305, 374.
- Whitmell, C.T., 1916. *J. Brit. astr. Assoc.*, **27**, 36.