OPTICAL AIDS FOR MOONSIGHTING

Prepared by
The Central Hilal Committee of North America

HOW TO BEGIN AND END A MONTH

- The beginning of a month is based on the actual sighting and observation of the moon. If the moon is sighted on the 30th night, the next month begins, and the previous month will be considered 29 days long.
- However, if the moon is not seen despite efforts to sight it, the month will complete 30 days, and the next day will mark the beginning of the new month.

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HOW TO BEGIN AND END A MONTH

صوموا لرؤيته وأفطروا لرؤيته

Fast when you see [the moon] and end the fast when you see [the moon.]

- It becomes evident that actually sighting and observing (ru'yah) the crescent moon is necessary; simply knowing about the moon's existence (wujood) on the horizon is not sufficient.

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HOW TO BEGIN AND END A MONTH

صوموا لرؤيته وأفطروا لرؤيته

Fast when you see [the moon] and end the fast when you see [the moon.]

- Moreover, the word ru'yah in the Hadith indicates that actual observation is necessary to end a month at 29 days. Additionally, the dameer (ha) indicating to the crescent moon (hilal) implies that the sighting of the actual crescent moon is necessary.
- In other words, two things are necessary: (1) actual sighting (2) of the actual moon.

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THE QUESTION OF OPTICAL AIDS

- The question that stands now is: do optical aids fulfill these two conditions?
- (1) actually sighting (2) the moon itself.

- To answer this question, it is important to understand the basic types of optical aids:

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BASIC TYPES OF OPTICAL AIDS

- Fundamentally, two types of optical aids are used for seeing distant objects, especially celestial bodies:

(1) optical/visual telescopes

(2) binoculars

- Both work by gathering the light coming from a celestial object, thereby enlarging it and strengthening the vision of the unaided eye.

BASIC TYPES OF OPTICAL AIDS

- (1) Optical/Visual Telescope

Optical telescopes are two basic types: (a) refracting telescope (b) reflecting telescope.

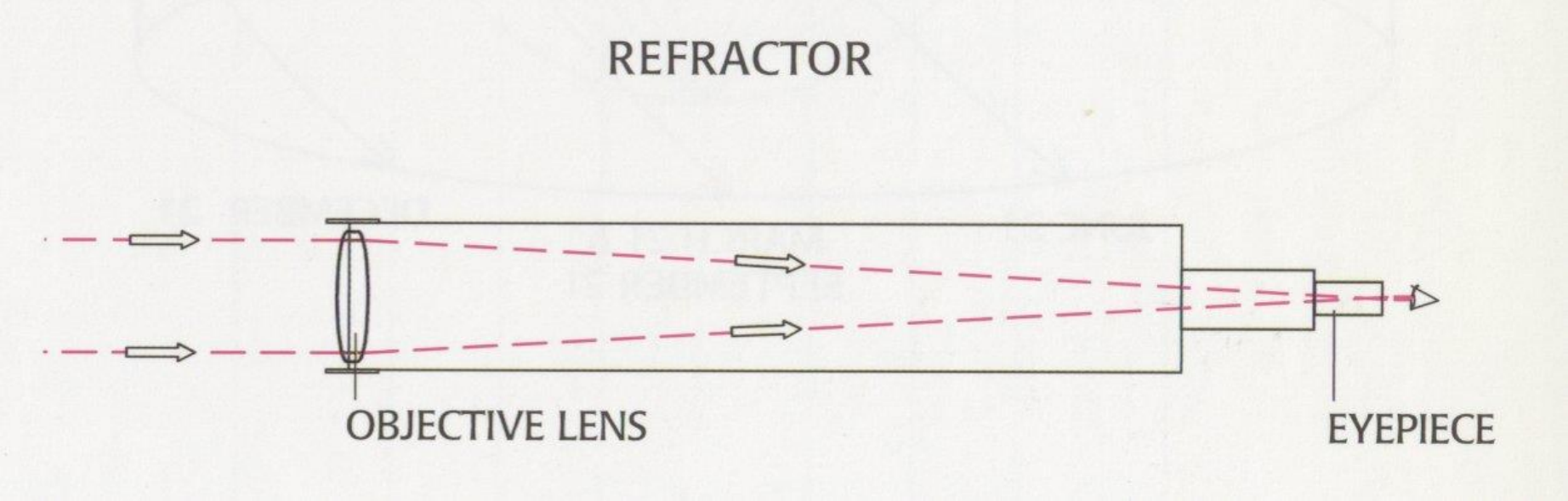
BASIC TYPES OF OPTICAL AIDS

- (1) Optical/Visual Telescope : (a) Refracting Telescope

- Refracting telescopes are composed primarily of lenses. The rays of light coming in a refracting telescope bend slightly, but nonetheless, pass through to the other side, through the eyepiece.

BASIC TYPES OF OPTICAL AIDS

- (1) Optical/Visual Telescope : (a) Refracting Telescope



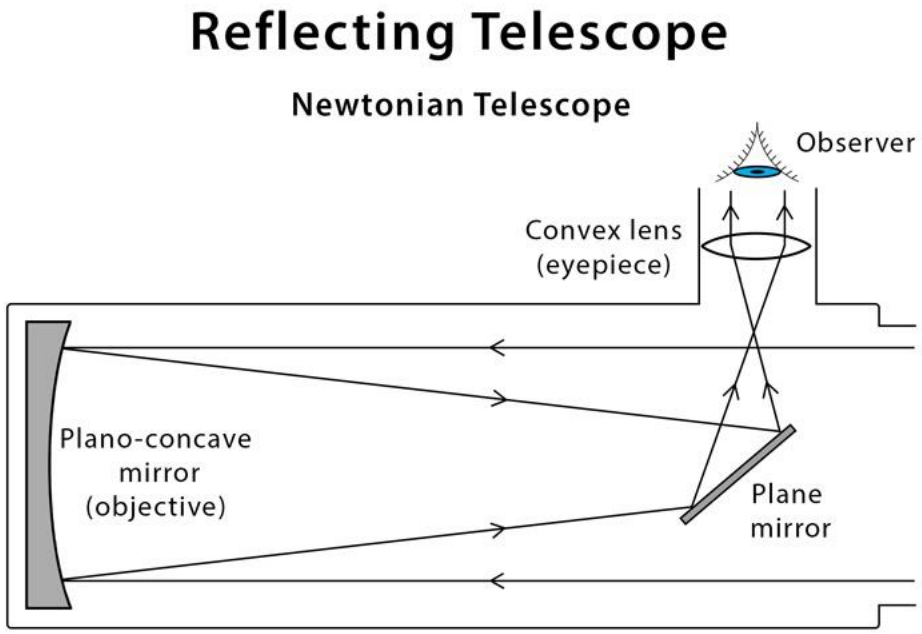
BASIC TYPES OF OPTICAL AIDS

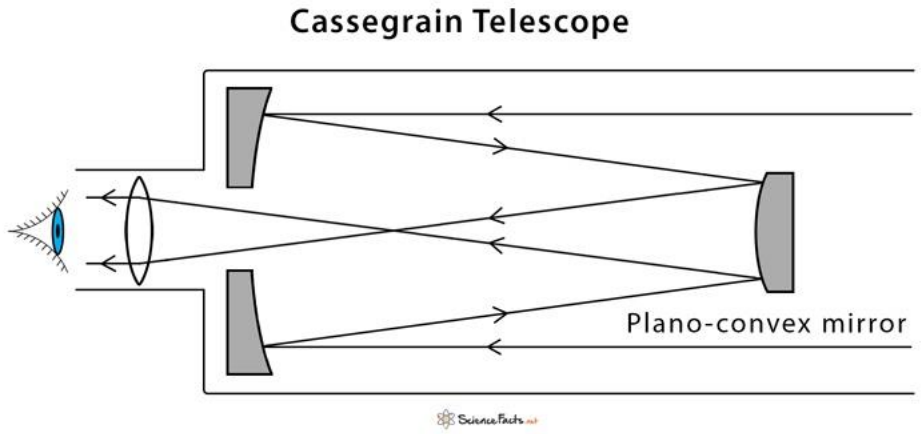
- (1) Optical/Visual Telescope : (b) Reflecting Telescope

- Refracting telescopes are composed primarily of mirrors. The rays of light coming in a reflecting telescope bounce off the mirrors towards the eyepiece.

BASIC TYPES OF OPTICAL AIDS

- (1) Optical/Visual Telescope : (b) Reflecting Telescope





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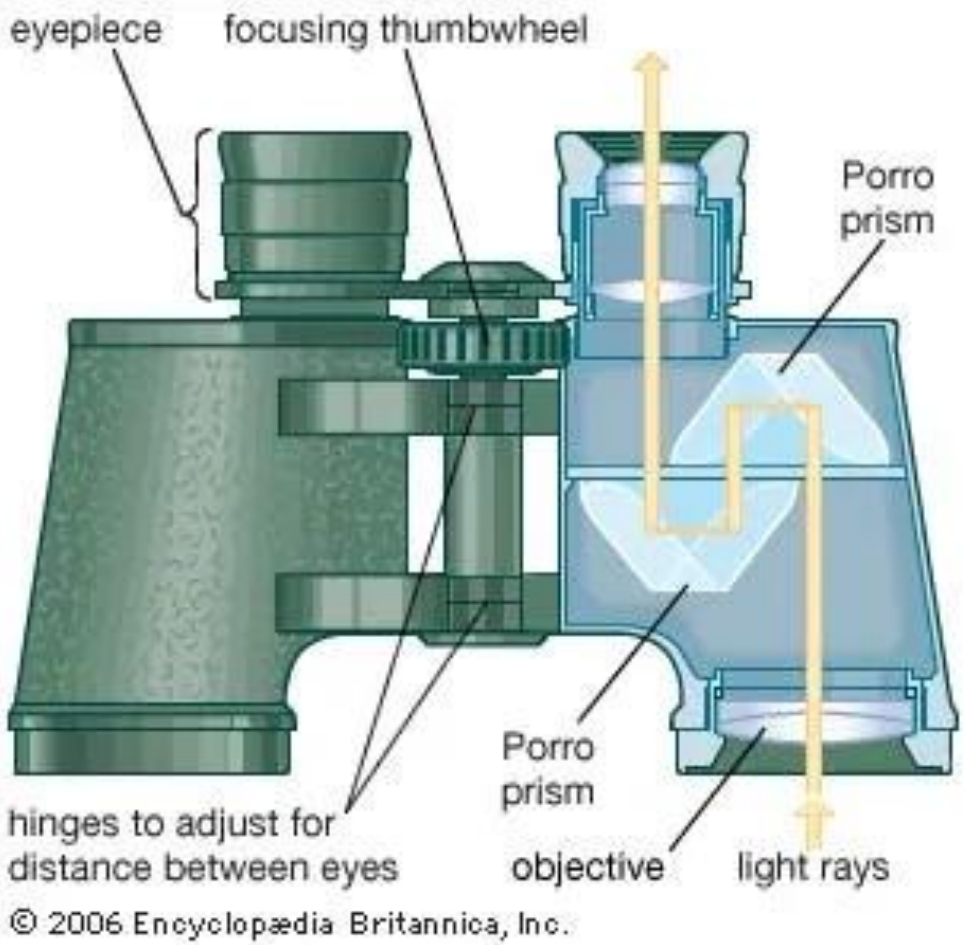
BASIC TYPES OF OPTICAL AIDS

- (2) Binoculars

Binoculars are essentially two refracting telescopes together. And since one main purpose of binoculars is terrestrial observation, seeing everything right-side up is necessary. As such, binoculars consist of an additional piece between the objective lens and eyepiece, known as prisms.

BASIC TYPES OF OPTICAL AIDS

- (2) Binoculars



HOW AN OPTICAL AID WORKS

- An optical aid enhances the vision
- Works by magnifying the size of the object and making it easier to see using lenses or mirrors to capture the light of the crescent that is present on the horizon

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HOW AN OPTICAL AID WORKS

- An optically aided sighting is only possible when the crescent is above the horizon and the portion of its side facing the earth is lit.

- Simply put, the optical aid enhances the visibility an object that is already on the horizon.

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FIRST CONDITION: ACTUAL SIGHTING

- Since there is no requirement in the Shari'ah for the validity of a sighting that it be without intermediaries or that it be direct, the reflection and/or refraction occurring within the optical aids do not disqualify the sighting.

- As such, a sighting achieved via optical aids is an actual sighting, meaning it fulfills the first condition of 'ru'yah.'

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SECOND CONDITION: ACTUAL MOON

- The second condition is that the sighting be of the actual moon itself, not of its image or conception or illustration, etc.

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SECOND CONDITION: ACTUAL MOON

- In refracting telescopes, the light rays go through (nufuz al-basar) the lenses acting as a medium.
- In reflecting telescopes, the light rays do not go through the mirrors, but rather reflect off (in'ikas) in the reverse direction.

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SECOND CONDITION: ACTUAL MOON

- (A) REFRACTING TELESCOPES:

- The fuqaha have considered sightings done from behind glass or other such transparent mediums to be sightings of the objects themselves, while acknowledging the possibility of distortion. They referred to this as nufuz al-basar, or the passing of the vision through the medium, which, in physics is termed as refraction. Thus, a medium of refraction (and any resulting distortion) seems to have no effect on considering it to be a sighting of the actual moon.

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SECOND CONDITION: ACTUAL MOON

- (B) REFLECTING TELESCOPES:

1. In physics, looking via the medium of a mirror or its likes is termed as reflection. This terminology can also be found in the works of the fuqaha. Some fuqaha have considered looking in a mirror or on water to be a viewing not of the object itself, but of its impression, illusion, or reflection, and thus they did not issue the same ruling for it as of seeing the object itself. Other fuqaha have explicitly negated this opinion and declared such a sighting to be of the actual object itself. The texts of Allamah Ibn al Arabi Maliki, Allamah Ala al Deen Samarqandi Hanafi, and Allamah Ala al Deen Kasani Hanafi are clear examples.

SECOND CONDITION: ACTUAL MOON

- (B) REFLECTING TELESCOPES:

2. Moreover, logically speaking, we see an object with our eyes because light rays bounce off an object and enter our eyes.
   - The same phenomenon occurs in an optical aid, as the same light rays that bounce off the object enter the objective lens of the optical aid, and then travel to the observer's eyes. This is true in both refracting and reflecting telescopes.
   - Since in both cases, with or without a medium, the same rays of light result in vision, thus, logically, the ruling of both will be the same.

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SECOND CONDITION: ACTUAL MOON

- (B) REFLECTING TELESCOPES:

- Thus, looking through the medium of reflection is also a valid sighting of the object itself.

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SECOND CONDITION: ACTUAL MOON

- BINOCULARS

- Binoculars are essentially two refracting telescopes; however the major difference between a normal refracting telescope and binoculars is that binoculars always have prisms to correct the orientation of the visible image. This is because binoculars are primarily used for terrestrial and not celestial observations. A unique type of reflection occurs within prisms called total internal reflection.

- Thus, the reasoning of reflecting telescopes will apply for binoculars.
- This is also the case for such refracting telescopes that have an additional diagonal attached to the eyepiece to correct the orientation, as diagonals are composed of either mirrors or prisms.

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CONCLUSION

- It is not necessary nor obligatory nor recommended to use optical aids, but if used, such a sighting shall be valid.

- This is because sighting using ordinary optical aids, although via a secondary medium, is really accomplished by the human eye and is truly a view of the actual moon; thus both necessary conditions are found.

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CLARIFICATION

- However, if an optical aid, in addition to the above mechanism, makes the celestial object visible through extraordinary means, (ex: it produces a celestial object from below the horizon, or it creates a picture or shape of the object based on astronomical data and not its actual presence) then such a sighting of the moon shall not be considered valid, as it is contrary to the Shar'i principle for valid sightings, that is, to (1) actually sight (2) the moon itself.
- A sighting using extraordinary means is essentially relying on the mere existence of the moon, which results in abandoning the simple criteria set by the Shariah of actually sighting the actual moon. Furthermore, when using such a powerful optical aid, it is most probable that the celestial object was not possible to sight, and so it is not plausible to consider this an actual sighting of the moon itself.

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SUMMARY

- In summary, a sighting via optical aids is considered a valid sighting, as there is no requirement for the validity of a sighting that it be without intermediaries or that it be direct.
- However, it should be clear that the command of Islam is to search for the moon, not necessarily to see it.
- This indicates that we are not required to adopt any additional methods that increase the chances of sighting the moon; rather we are obligated to go out and look for the moon, howsoever we easily can. Therefore, it is not obligatory to try to sight the moon via additional instruments like optical aids. Moreover, those who have access to such instruments but choose to search for the moon with the unaided eye, still fulfill their obligation and are not considered negligent.

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