

**MR2162277 (2006e:01005) 01A30**

**Ibn al-Haytham [Abū ‘Alī al-Ḥasan ibn al-Ḥasan ibn al-Haytham]**

★**The trace on the moon’s face.**

Complete text in English, French, German and Arabic.

Edited by Yousseff Ziedan and with a preface in Arabic by Ismail Serageldin.

With a booklet containing a facsimile of the original Arabic text.

*Bibliotheca Alexandrina, Alexandria, 2002. 132 pp.*

This small treatise (14 pp. in the Arabic ms.) starts by showing that the dark traces seen in the moon can be due neither to objects located between the earth and the moon nor above the moon but within its epicycle (that is, its particular sphere), since they are always seen at the same place with respect to the moon; nor can they be due to something behind it, in part for the same reason, in part because solar eclipses show the moon to be totally opaque. They must thus be due to the moon itself, to different properties of different parts of its surface—a rather daring deviation from Aristotelian physics.

Exploration of the nature of these differences provides ibn al-Haytham with the occasion to present in brief the physical aspects of his optics, which relies exclusively on light and ascribes no reality to visual lines. In consequence, it has to distinguish between light which is reflected and light which is received by bodies and re-emitted. This latter light can be absorbed either in depth (in more or less transparent objects) or by the surface alone (in opaque objects). Density decides how much light is received, and this in interaction with the proper colour of the body decides what is seen. The dark parts of the moon surface, so it is concluded, are denser than the rest, and therefore make the proper colour of the moon—the somber red-black hue of the eclipsed moon—more influential.

The reviewer was unable to read the Arabic introduction and text. The three translations are so different that they must have been made by different persons of varying competence. The German version appears to be close to the text but translated by someone who does not understand the technical meanings of terms and does not always grasp the reasoning, the French by someone understanding the technical meaning and conscientious in rendering the meaning, the English finally (often close to the French) being more free but often in problematic ways. For instance, the German version speaks (p. 72) of “das Körperliche für das Bild der Farbe” where the French text (p. 47) has “le hylé de la forme de la couleur”, and the English translation (p. 23) speaks of “the primordial matter of the image of colour”; on p. 72, the German text asserts that the colour of a body can be identified with its density, whereas the context requires that colour and density are not the same but act together (as also stated in the other two translations). Overall, readers who read French but no Arabic should therefore use the French text but at least consult the other translations for control (e.g., on p. 49 the French text speaks of “planètes terrestres”, where the English version has “objects on earth” and the German words are “irdischen Körper”; obviously the French translator has chosen a specialized technical meaning where none was intended). This is unfortunately quite cumbersome, since the four texts are not geared together and even the

paragraph divisions differ.

This is the first volume in a planned series of multilingual editions (the second of which, a text by al-Rhazī, has already appeared). The publisher could make an already valuable initiative much more useful by providing the translations with keys to the pagination (and at best, the lines five by five) of the Arabic text (or by putting the texts in four columns on confronting pages).

Reviewed by *Jens Høyrup*

© *Copyright American Mathematical Society 2006, 2007*