

## About the Cover

### Floating Bodies

This month's cover shows two views of a group of diagrams to be found in the Archimedes Palimpsest. It accompanies the article by Shirely Gray in this issue in which the Palimpsest is discussed. In the next issue of the *Notices* there will be a review by Len Berggren of *The Archimedes Codex*, a book by Will Noel and Reviel Netz about the Palimpsest. The images have been taken from the Palimpsest's website <http://www.archimedespalimpsest.org/>.

A palimpsest is a manuscript in which an older and presumably no longer wanted text has been erased in order to write over it. In this case, it happens that the text that has been overwritten is the oldest and most authentic version of several of the works of Archimedes, and in the modern perspective far more valuable than the Byzantine religious script laid on top. On the left you can see the visible prayer book, and on the right what technology has been able to extract.

The diagrams are from the end of Archimedes' treatise "On Floating Bodies I". It justifies easily the frequent attribution to Archimedes of being the first theoretical physicist. The treatise opens with what is essentially a technical lemma characterizing spheres, and then goes on (in Heath's translation):

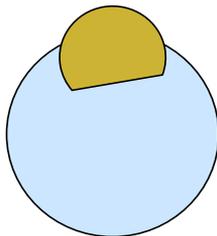
*Proposition 2. The surface of any fluid at rest is the surface of a sphere whose centre is the same as that of the earth.*

Since Eratosthenes was a contemporary of Archimedes, indeed a correspondent, the assumption implicit here should be no surprise, but since Archimedes' work must have been familiar to European navigators of the fifteenth century, one might justifiably wonder why we were all told the myth of Columbus—but that's another story.

The diagram on the cover is part of the ninth and last proposition of "Floating Bodies I". In T. L. Heath's translation:

*Proposition 9. If a solid in the form of a segment of a sphere, and of a substance lighter than a fluid, be immersed in it so that its base is completely below the surface, the solid will rest in such a position that its axis is perpendicular to the surface.*

A segment of a sphere is one of the pieces into which it is sliced by a plane, so the situation is roughly like this (with the immersed body shown in an unstable state):



Heath goes on to remark:

The proof of this Proposition has only survived in a mutilated form. It deals moreover with only one case out of three which are distinguished in the beginning, viz. that in which the segment is greater than a hemisphere...

Thus we might hope to recover from the Palimpsest a somewhat more complete version of "Floating Bodies". The diagram on the cover does not reassure us, however. Reviel Netz, coauthor of the book reviewed by Berggren, tells us tentatively:

The original text for I.9 as transmitted in late antiquity had only one case ... therefore had only one figure. The immediate source of the Palimpsest (perhaps some text of Late Antiquity?), as well as the Medieval translator, both thought that the text should be accompanied by three figures, not one. The immediate source of the Palimpsest solved this problem clumsily, adapting the figures of I.8 as if they could fit exactly the cases of I.9. ...

What the evidence suggests ... is that the original text had one figure only and that the latter figures are Medieval. Note that had we had only the Latin translation, we could well be led to believe that its latter figures are authorial: the divergence between the Palimpsest and the Latin translation is therefore telling and very important. In this way, even misleading, spurious figures can inform us of the original text of Archimedes—by allowing us to discount evidence which otherwise would appear significant.

He adds, "It's a devilish textual matter, Floating Bodies."

Nigel Wilson and Netz are working on the texts of the Palimpsest, hoping to publish in the not too distant future. In the meantime, Wilson has had privately printed, typeset by hand at the Jericho Press, a handsome if brief transcription of what the Palimpsest contains of the early part of "Floating Bodies I" (from the very early folia of the manuscript, which were extraordinarily difficult to render readable). Information about this curious booklet is available from J. F. Coakley at the Jericho Press ([jfc39@cam.ac.uk](mailto:jfc39@cam.ac.uk)).

The Palimpsest website contains much of great interest, in particular a very large collection of images. The copyright to all images of the manuscript belongs to the anonymous Owner of the Palimpsest, but they are freely usable, subject only to mention of this copyright. We can only hope that this kind of generosity be imitated widely.

—Bill Casselman, Graphics Editor  
([notices-covers@ams.org](mailto:notices-covers@ams.org))