

both basic astronomy and the cultures in which naked-eye astronomy has played a role. The main purpose is to provide both an astronomical introduction to non-astronomers and an appropriate introduction to relevant archaeological and anthropological topics for the physical scientist. It reflects the needs of an archaeoastronomy course taught at the University of Calgary for the past 15 years.

Content areas include discussions of time, planetary positions, observational methodology, astronomical dating techniques, transient events in astronomy, alignments, and premodern navigational techniques. A major section on astronomy in cultures begins with the Palaeolithic, the Megalithic, then through the Mediterranean, Indian, Chinese, Oceanic, MesoAmerican and other New World cultures, and concludes with discussions on the "Descent of the Gods" and the importance of astronomy in mythology and ancient religion.

It will include a full bibliography, and practitioners in the field with works in press are invited to send us preprints. This work was supported in part by a Killam Resident Fellowship to E. F. M.

#### THE ASTRONOMY AND ASTROLOGY OF ISIDORE OF SEVILLE\*

F. SALVADOR AND A. APARICIO

The encyclopedist Isidore of Seville (b. 560–d. 636) is a point of connection between the ancient and medieval worlds. In his "Etymologies" he tries to compile the knowledge of his time. Following the classic tradition he makes the difference between the conceptions of astronomy and astrology and also distinguishes two fields inside astrology: the first one, that he defines as "superstitious", is somewhat similar to the present meaning of astrology. The second one is something like a practical application of astronomical knowledge to daily life, so its boundaries with astronomy are quite diffuse.

#### DAVID GILL: THE EDUCATION OF AN ASTRONOMER

JOSEPH S. TENN

Sonoma State University

In 1872 a skilled clockmaker, expert marksman, and successful businessman took his first paid job in astronomy at age 28, eleven years after his academic education

had ended. His background proved to be excellent preparation for becoming one of the leading astronomers of the world.

#### THE DISCOVERY AND EARLY PHOTOGRAPHS OF THE HORSEHEAD NEBULA

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AND

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The introduction of relatively "fast" dry plates, photographic doublet lenses, and precision equatorial mounts driven by sidereal clocks stimulated advances in astrophotography in the 1880s. An early advocate was William Henry Pickering, who persuaded his brother E. C. Pickering (Director of Harvard College Observatory) to develop one of the most extensive astrophotographic programs in the world.

An unexpected concomitant of an early program to study the great nebula in Orion was the photographic discovery of the dark nebula now called Barnard 33 or, familiarly, the "Horsehead" nebula, first recorded and measured on an 1888 plate by HCO staff member Williamina Paton Fleming. Though identified by Harvard as the official discoverer, Mrs. Fleming was apparently denied credit by Dr. J. L. E. Dreyer, compiler of the *New General Catalog* and *Index Catalog* of celestial objects.

The authors have located the original pictures and, by studying all relevant papers on the subject in the Lick Observatory library and Mary Lea Shane Archives, determined that the Harvard "Horsehead" plates probably predate all other known photographs or references to the object.

(Slides of the earliest published images of B33 are used to illustrate the talk.)

#### GLOBULAR CLUSTERS: THE HEART OF SHAPLEY'S UNIVERSE

BARBARA L. WELTHER

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Seventy-five years ago Harlow Shapley began his mas-

\*Poster paper.