

## Clarion Article for Dec 2017/Jan 2018

### “Gaia Mapping the Galaxy” by Prof. Andrew Norton

*Thursday 16<sup>th</sup> November, 2017*

Gaia in Greek mythology represented the Earth and is the ancestral mother of all life. In man’s continuing quest to explore and understand “Space the final frontier”, the European Space Agency (ESA), back in 2013, launched “Gaia”, its five year mission to map one percent of our Galaxy. Gaia’s ambitious undertaking is to chart and produce a three-dimensional map of our Galaxy, the Milky Way, in unprecedented detail in the process revealing the composition, formation and evolution of the Galaxy. Gaia will provide unparalleled positional and radial velocity measurements with the accuracies needed to produce this 3D map of around one billion stars and to carry out spectroscopic observations of around 150 million stars throughout the Local Group. In fact the project is also known as by its unofficial name of “A billion stars in a billion pixels...”



The camera used for this is one of the most advanced digital CCD (Charge Coupled Device) cameras in existence and is composed of an array of 106 CCDs with a resolution of around 1 billion pixels. Gaia orbits the Sun and in six hours the two telescopes within scan one large circle to observe around 10 million objects. These are not only stars but

may also include asteroids of varying size, especially the large ones. This information is used by NASA and other organisations to plot their trajectories especially for those that may impact on Earth. The UK host the Cambridge data processing centre, where the Gaia imaging data are processed.

Professor Andrew Norton from the Open University gave “The Adstock Science Club” a comprehensive, and extremely enlightening talk about the structure, function and science behind Gaia including the methods used to locate and fix a star’s position in three dimensions within our galaxy.

If you are interested, I have included in our web site, as part of the talk summary, a couple of links to short 60 second cartoon movies which try to explain Gaia

Marius Stuart