

Critical Account of Scientific Reading

I am writing about a scientific book called 'The Guide To The Galaxy' by Nigel Henbest and Heather Couper and published by the Press Syndicate of the University of Cambridge 1994. This book is about the galaxy in which our planet and our solar system lie. It contains information that goes beyond what most people or people with limited scientific knowledge know. The book talks about the efforts and the hard work by early scientists to discover more and more about our galaxy. It also talks about the most sophisticated techniques used nowadays to probe the galaxy.

The first chapter investigates the discovery of our galaxy, illustrating the work by early thinkers and scientists. It starts with the origin of the name of our galaxy, Milky Way, which was named by the Romans. The chapter also talks about the conception of other civilisations about the 'Milky Way', such as the Greeks and their theory 'a stream of milk which gushed from the breast of the goddess Juno as she nursed the thirsty infant Hercules', while the North Americans thought of it as a route of ghosts on their way to the 'land of the hereafter'. The Eskimos saw it as a guide to travellers.

The chapter then talks about some scientists like Galileo Galilei and his efforts in inventing the telescope, which took our knowledge of the galaxy into a whole new level. The theory of 'Universal Gravitation' by Isaac Newton and the 'New Hypothesis of the Universe' by Thomas Wright were discussed briefly. The book also mentions the work by Immanuel Kant, William Herschel, Lord Rosse and many others. The book depicts their different approaches to the challenges they are faced with. Some were inspired by religious beliefs like Thomas Wright who saw the galaxy as a perfect example of God's great design. Newton was trying to prove his theory of Universal Gravitation and the related issues, while William Herschel who is a musician and a composer by profession started the race of making ever bigger telescopes, followed by Lord Rosse. Immanuel Kant was a different kind of philosopher of Wright who was trying to put Wright's ideas onto a scientific footing using his mathematical background. Those scientists and many others started a debate and raised many questions that lead to our present understanding of our galaxy and other galaxies. Scientists nowadays are still using their hypothesis as the base for the sophisticated techniques in discovering more about galaxies.

The chapter's main scientific issue was the debate about the existence of stars in groups that form galaxies. Scientists were trying to prove this using different techniques and approaches that developed over the years. Some started wondering about the brightness of stars and wanted to prove that they lie in specific groups, from there scientists began to find ways to determine distances from the stars to earth. Harlow Shapley is credited for discovering a distance-finding programme by comparing a star's brightness with its calculated intrinsic luminosity. His discovery of the programme enabled him to find out that stars are arranged in two symmetrical clusters above and below the plane of the Milky Way, which meant that our sun is far from the centre of the galaxy and that those stars form a skeleton that is known to us now as our galaxy.

The second chapter, which is called The Local Group talks about the neighbouring galaxies. These clusters of galaxies are the rule of the universe. They vary in sizes, with some clusters containing thousands of galaxies and some with few ones. Our local group is flattened in shape and it measures about 5 million light years across. The biggest galaxy in our group is Andromeda, which is almost half as big again as our Milky Way, containing an estimated 400 billion stars. One of the other galaxies that excites interest and like Andromeda can be seen to the naked eye is the small spiral galaxy M33.

The chapter begins the tour with the largest, Andromeda and talks about its discovery, when it was first viewed, photographed and the arrangement of its stars revealed. The English astronomer Isaac Roberts revealed its true shape as recently as 1888. This is because of the angle at which it lies, 78 degrees. Isaac Roberts was also the first to recognise it as spiral in shape, a fact that was not obvious to the eye observing through a telescope.

The chapter then talks about the third largest galaxy in our local group, M33, which is, like Andromeda, a spiral galaxy but its arms are displayed beautifully. It was discovered by Charles Messier in August 1764. It is considerably smaller than Andromeda and the Milky Way- about 400 000 light years in diameter, containing about one tenth as many stars as Andromeda.

The book details the lives of astronomers and scientists in a good way that makes it more interesting than I originally thought. In particular the story of Harlow Shapely who wanted to become a journalist, but the university could not offer him a place, because the department of journalism was not established then. He looked at the courses available and could not pronounce Archaeology, instead he chose astronomy, which was the first one he could pronounce.

I found the issues in the book interesting though hard to understand. The use of specific scientific terms makes it unsuitable for those with little or no scientific background, even though the book tries to explain the major concepts. The reader has to read it three or four times to make sense of some issues, but all around I think it is a challenging book as well as interesting. It talks about some of the scientists that we know little or nothing about in a detailed way and the reader does not feel that the book is biased to a certain scientist or an astronomer in any way.

I conclude by reminding myself and others that the determination and hard work by early scientists in this field was huge. We have to emphasise the massive achievement by those scientists in designing the technology that we rely on nowadays. Without the invention of telescopes all that would not have been possible and without the basic concepts that we have built on and created our knowledge of the universe.