

.....at the speed of sound

Bernard Lovell brings cosmology to U of A

by Winston Gereluk

When Karl Marx said, "In direct contrast to German philosophy which descends from heaven to earth, here we ascend from earth to heaven," he was

obviously not referring to astronomers like Sir Bernard Lovell, or for that matter, to people who come to hear him speak.

About 700 interested people filled SUB Theatre last night to

hear the world-renowned director of Jodrell Bank Observatory talk about recent astronomic advances and the impact that they were having on traditional forms of thought. The Forum was the second in a series presented by the Students' Union this year.

Even those that came with skepticism concerning the relevance of astronomy to the everyday concerns of people could not help but be drawn in by the fascination of discovery contained in Lovell's address. He drew the audience with him, and had them consider cosmological questions so vast in space and time that they had little meaning within the context of everyday quantitative evaluations.

According to Bernard Lovell, modern advances in the method and technique of astronomy, like the advent of the radio telescope, have placed man on the verge of obtaining the observational proof necessary to legislate decisively on theories concerning the origin and nature of the Universe, the place of the Earth in it, and the uniqueness of man which have hitherto lain in the realm of hypothesis.

"If this is indeed the case, the impact on our minds may be severe," he said, drawing a parallel to the effect that the theories of Copernicus and Galileo had on the theological and philosophical assumptions of their day.

Any possibility of reaching cosmological certainty is

precluded by a necessary limitation of the science. "In astronomy, we have no knowledge of the present time — all is of time past because the velocity of light and radio waves is finite ... Our knowledge of the sun is eight minutes old ... we see the nearest star as it was in 1967 ... Andromeda as it was 2,000,000 years ago, and galaxies as they were 5,000,000,000 years ago." Space resolves into Time, which works, on the other, to give the astronomers the possibility of studying the remote past of our Universe.

The fact that our knowledge of the Universe is incomplete, was brought to the attention of astronomers brutally by the discovery of Quasars only twelve years ago. These rapidly-receding (half the speed of light), high-density galactic masses brought to light by radio telescopes, compose about 25 per cent of our Universe — and may well, in their rapid dissipation of matter, illustrate the history of our Universe.

Modern astronomy has literally done away with a deep-seated belief, manifest in most aspects of our Western culture, that man occupied a position of central importance in the Universe. "It is a remarkable fact that although 350 years ago, the motion of the Earth around the Sun was accepted, nevertheless until our own age, the belief that the Sun and its family of planets existed at the center of the Universe and that man was pre-eminent at the

centre of the Universe continued to be a firm belief with no scientific evidence to contradict it.

Lovell pointed to a discovery of Hubble made possible by the advent of the radio telescope that indicated that vast numbers of galaxies make up our Universe, and more importantly, that their movement was characterized by a rapid separation from each other and from us. The Universe, he said, is in a state of violent expansion, as if it were blowing up. Ten billion years ago, it could very easily have been occupying a space about the size of our own solar system, he added.

Lovell finished his address with a short plea that people understand the present crises that space science is undergoing deriving firstly from its demands for extremely expensive equipment, and secondly, from its obvious connections to the military-industrial complex.

He pointed out that the first Russian Sputnik was sent into space on the rockets of the world's first Intercontinental Ballistic Missile, and added, "The rockets which launch American space probes are in another guise, the rockets which could convey the instruments of total destruction — the hydrogen bomb."

The immense power of our astronomical instruments today in man's unending attempts to understand his place in the Universe, and on the other hand, the fact that these tools are divided from these intellectual pursuits and from the weapons of destruction by a very narrow margin," were his concluding remarks to the audience.

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