SIGNALS FROM SPACE

Two radio astronomers at the National Research Council of Canada have reported the first detection of radio signals from recently-discovered X-ray stars.

Dr. B.H. Andrew and Dr. C.R. Purton of the Radio Astronomy Section of NRC's Radio and Electrical Engineering Division, recorded radio signals from Scorpio X-1, strongest of the X-ray stars, with the Council's 150-foot diameter radio telescope. This instrument, one of the most powerful and versatile telescopes in the world, is located at NRC's Algonquin Radio Observatory at Lake Traverse in Algonquin Provincial Park, 120 miles northwest of Ottawa.

The discovery of the astral radio signals is important because measurements of the amount of energy emitted at X-ray and radio wavelengths are expected to give valuable clues as to what is going on inside the stars of this type.

CHANCE DISCOVERY

X-ray stars were discovered almost by accident six years ago when a group of scientists in the United States launched a rocket to look for X-rays from the moon. Instead, they found X-rays coming from the direction of the centre of the Galaxy. Since then, astronomers have discovered some 20 X-ray stars, the strongest being in the constellation Scorpio.

The fact that X-ray stars remained undiscovered until recently is attributable to the inability of X-rays to penetrate very deeply into the earth's atmosphere, which means that their discovery had to await the development of rockets and satellites. Because X-ray astronomy has to be carried out from rockets and satellites, it is particularly difficult to pin down the exact positions of X-ray stars in the sky. They appear, however, to be in the Milky Way, which means that they are in the same galaxy as the sun.

In observing the X-ray star in Scorpio, the NRC astronomers were dealing with very faint radio signals from outer space. They had to take special precautions to make sure that the signals they were measuring were from the star and not from background radio noise.

Stars so far identified with X-ray sources seem to be remnants of stars that have exploded some time in the past – the supernovae as they are called. The Scorpio source measured by Dr. Andrew and Dr. Purton corresponds to a star too faint to be seen by the naked eye, but which through a telescope also appears to be an old exploding star.

One of the explanations of the X-rays is that they are emitted because of the high temperature of electrons in the X-ray stars. According to the NRC astronomers, this is incompatible with the measurement of radio emission. They say the radio signals are better explained by emissions from electrons moving at high velocities in the strong magnetic fields in the stars.

COLLEGE MILITARY COURSES

Professorships of military and strategic studies will be established at the following Canadian universities this autumn under a new programme developed by the Department of National Defence and the Association of Universities and Colleges of Canada: Acadia University, Wolfville, Nova Scotia; Laval University, Quebec City; Carleton University, Ottawa; Queen's University, Kingston, Ontario; and the University of Victoria, British Columbia.

The professorships will enable both graduate and under-graduate students to study problems of international and national security. Financial support up to a yearly maximum of $250,000 will be provided through the Department of National Defence and will include salaries, university overheads, and reference material. Graduate scholarships, fellowships and individual programmes of research may be included.

Recruitment of staff and development of course content will be the sole responsibility of each university. It is expected that the establishment of these professorships will encourage and contribute to objective and informed study of all aspects of Canadian defence problems in the broad context of international security.

Other universities may associate themselves in the programme through local co-operative arrangements.

PEDIGREE CATTLE TO BRITAIN

The largest shipment of pedigree cattle ever exported from Canada to Britain – 633 Holstein-Friesian heifers and 14 bulls – arrived at Liverpool recently.

The animals were purchased by a syndicate of nine breeders and dairy farmers in Cheshire, to replace stock lost during an outbreak of foot-and-mouth disease last year. The sale indicates that Canadian Holstein-Friesian breeding stock is highly regarded since the Canadian cattle were purchased even though they cost more than British cattle or imports from Holland. As well as being a potential for superior production, the Canadian Holstein-Friesians are completely free of brucellosis.

MAJORITY IN CALF

The shipment comprised 516 in-calf heifers, 26 bulling heifers and 91 younger animals at about the yearling stage, as well as the 14 young bulls. The bulk of the shipment was consigned to eight farms to form the basis of pedigree-breeding programmes, using both the imported bulls and imported semen from selected proven sires in Canada.

The cattle were bought privately with the co-operation of the Holstein-Friesian Association of Canada, which introduced the British purchasers to breeders and inspected the cattle before shipment.