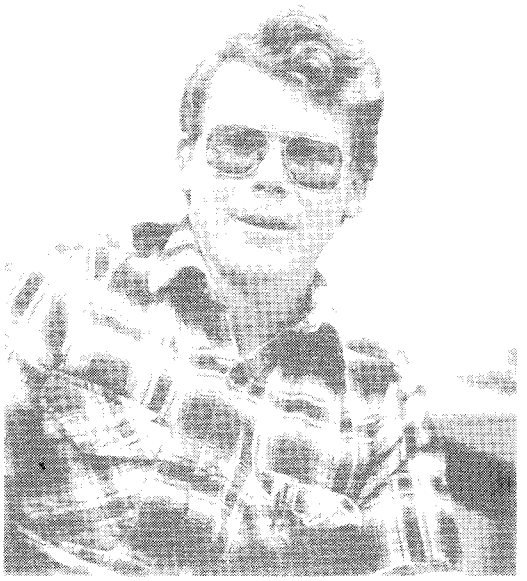
# Robert McLaren, Resident Astronomer

Dr. Robert McLaren joined the CFHT as Resident Astronomer on February 1, 1983.

Bob comes to us on leave of absence from the University of Toronto where he is an Associate Professor in the Departments of Astronomy and Physics. He obtained his Ph.D. from that institution in 1973 in the field of molecular physics and then spent two years as a NATO Postdoctoral Fellow with Dr. Charles Townes at U.C. Berkeley. Before taking up his position as Resident Astromomer, he had been on sabbatical leave at CFHT since July 1982.

Bob's expertise lies primarily in the field of infrared astronomy, in particular photometry and heterodyne spectroscopy. In recent years he has undertaken a fundamental recalibration of the local extragalactic distance scale based on infrared photometry of Cepheid variables, in collaboration with colleagues and students at Toronto.



Among his main scientific responsibilities in Waimea, Bob counts the supervision of the IR photometer and bolometer systems, the coudé spectrograph, the library, and the support of visiting astronomers.

# COMMISSIONING OF THE CCD CAMERA

After much anticipation, the RCA-CCD has been commissioned during the first semester of 1983. Visitor runs have already been scheduled for the second semester. The camera head and driving electronics were constructed at the Department of Astronomy and Geophysics at UBC by Ron Johnson under the direction of Gordon Walker. Users of the CFHT Reticons will recognize the UBC-type dewar in which the CCD resides.

The January laboratory tests indicated that the chip is cosmetically clean with only one bad column. At high light levels, the device worked well, that is, the transfer efficiency was good, and the responsivity was linear. At lower levels, the transfer efficiency was poorer than expected, and the on-chip amplifier was rather "hot".

Engineering tests on the sky in February were done using the FOCAS spectrograph/imager built at UBC by Paul Hickson as an interface to the telescope. Tests done at the prime focus indicate that the POSS limit can be detected in approximately 15 sec. The engineering run was scheduled during bright time which prevented the acquisition of deep exposures; the detector would have been saturated by the bright sky in about 20 minutes, through a broad-band filter. However, the most serious problem was the on-chip amplifier which saturated the corner pixels in 3 minutes, and exhibited a highly non-uniform pattern in the shape of a "star burst" emanating from the corner where the amplifier sits.

Happily, after extensive tuning, testing and some modification to the original electronics, the transfer efficiency has been improved to an acceptable level, and the effect of the on-chip amplifier has nearly been removed. The characteristics of the device as measured in the laboratory indicate that the instrument will meet the demands placed upon it, i.e. it will become one of the real workhorses at CFHT.

Parallel to the testing of the camera, the CCD acquisition & display software has been improving at a strong rate. To date the software is capable of acquiring frames and displaying them on the Pericolor image display, performing arithmetic operations and simple statistics. Improvements to the focusing procedure, speed of operation and remote control of FOCAS (filter wheel in and out, spectroscopic/image switching, shutter control, etc.) are underway.

The second engineering test have been scheduled for the end of June, 1983 immediately prior to the first official CCD runs. At that time new software functions will be tested, and the CCD with FOCAS will be exercised. Although the instrument can be used at the F/8 focus, the tests will be conducted at the prime focus to evaluate performance characteristics in both the direct imaging and the spectroscopic modes. The CCD will also be coupled to a VARO intensifier for spectroscopy. We anticipate that the versatility of this instrument will suit many program needs.