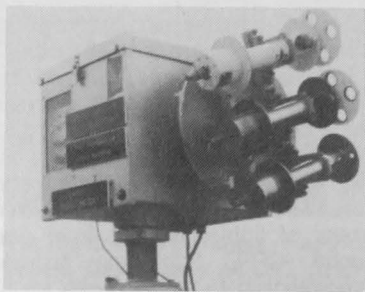


Prominent among the array of stratospheric equipment straddling the roof of the AES Downsview Headquarters Building is a device called a Sun Tracker. Basically it is a tall steel mounting providing firm support for three or more pyrheliometers or instruments for measuring direct solar radiation.

The Sun Tracker's main claim to fame is to be able to fix on the sun, even in deep cloud and track this celestial body right across the sky. The instrument, invented by Dr. D. Wardle of the Experimental Studies Division of the Atmospheric Research Directorate is one of AES's significant contributions to world-class weather technology.

While the pyrheliometer is measuring direct solar radiation, the motion of the tracking device is directed mathematically from a computer, usually a Commodore 64. The exact position of the sun in the sky is known at any given moment in terms of numbers representing longitude, latitude, and time of day. As a first step all these numbers are fed into the computer. The computer can now mechanically direct the pyrheliometer to look directly at the sun. More importantly the tracker can be set to move concurrently with the sun for several months or indeed years. It takes 18,000 individual steps to bring the



tracker round the 360 degrees.

Solar radiometers are in use in various industries in Canada. These instruments are sent to AES Downsview from time to time for testing and calibration. The Sun Tracker carries a special pyrheliometer which is used as a standard. In addition one or two others, which are being tested, can be attached beneath the standard pyrheliometers. The electrical signals from all three are recorded continuously on magnetic tape.

Pyrheliometer data is monitored and analysed by David Barton of ARPX. (photo above) David has a degree in computer science. He has worked on atmospheric radiation measurement and analysis for several years and has been on AES staff for three years. In addition to his monitoring work, David has worked on development of the Sun Tracker and its selection for manufacturing in Canadian industry. Already sales have been brisk in several countries, like in West Germany and Sweden.

In 1985, David took a pyrheliometer to New River, Arizona, and there, using facilities provided by a private company, he and other technologists set up their pyrheliometers and took direct radiation measurements. At the same time Dr. Wardle took a pyrheliometer

to the South of France. The purpose of these journeys was to establish criteria for interpreting the published results of experiments conducted at various longitudes and latitudes through intercomparison of data.