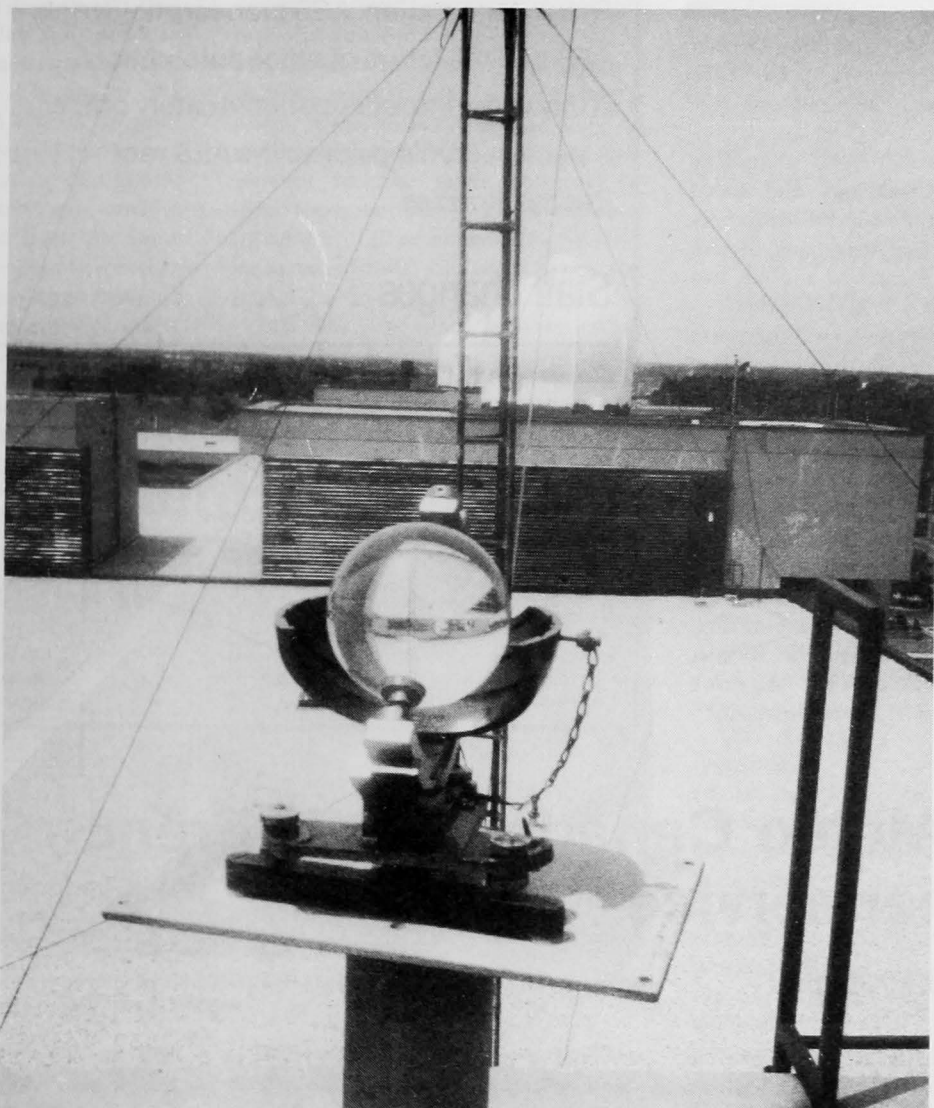


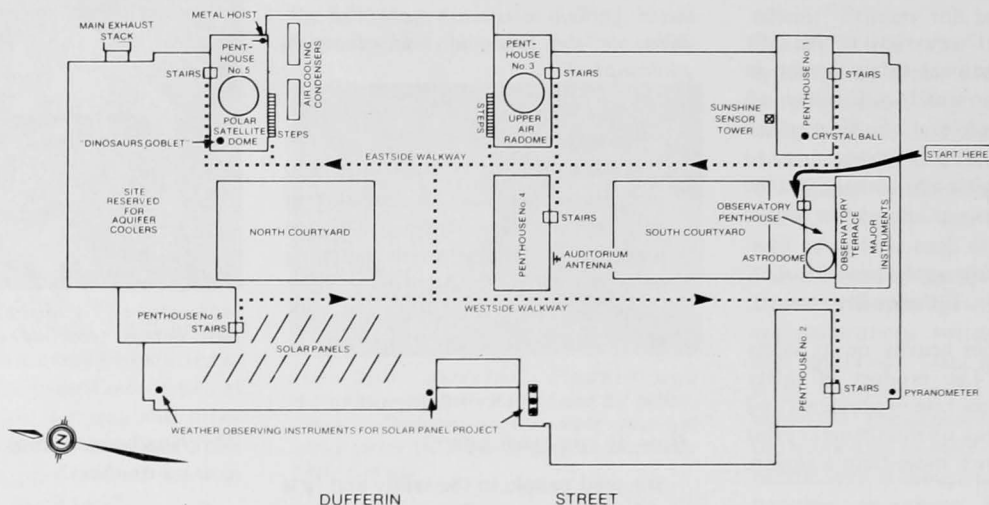
September/October 1984

# ZEPHYR



**Guide to the AES roof**

# A PLAIN PERSON'S GUIDE



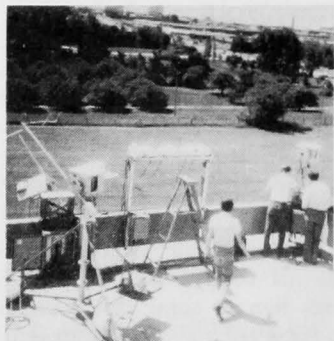
With some good weather still to come, there is still time to explore Canada's most scientific roof.

Most of the instruments on the 9 500 sq. metre roof of the AES Downsview building support atmospheric science projects. However, Public Works Canada staff are now erecting three cooling towers on the north side for the unique aquifer air conditioning project . . . a strictly subterranean affair.

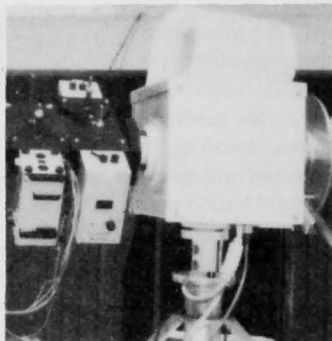
Chief DPW engineer Bloise Thomson says the AES building is unlike other large structures which tend to bunch their rooftop equipment together. AES's air ducts, ventilation and

exhaust pipes are widely spread. Also there are seven penthouses, 90 solar panels and three large domes. Here's a guided tour for avoiding roof-top confusion.

Of the six stairways leading to the roof, the three on the south side are best for starting the tour. Two of these skirt large, concrete penthouses, but for the adventurous there are some steep steps in the fourth floor Experimental Sciences division overhung by a sinister-looking chain hoist hook. They go directly to the roof's undisputed highspot, the Atmospheric Observatory.



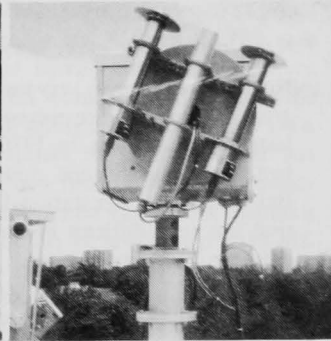
*This is a general view of the south-facing Observatory terrace with its array of solar radiation and ozone monitoring equipment.*



*Outside the Observatory penthouse you could see several AES made Sunphotometers linked up to a Suntracker (right), a device used for pointing instruments at the sun. The Sunphotometer was used this October by Canadian astronaut Marc Garneau aboard the U.S. space shuttle.*



*Also displayed is the AES designed Brewer spectrometer, one of the world's major ozone detecting devices. Technologist Archie Asbridge stands by.*



*This pyrliometer measures direct radiations from the sun and is also mounted on a Suntracker.*

# TO THE AES ROOF



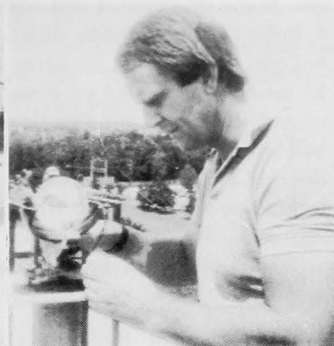
The penthouse contains monitoring equipment for all atmospheric Observatory instruments. It houses the roof's only "permanent" inhabitants — a group of four or five AES technicians who need to stay close to the action. Note the "astrodome" on the roof which will soon house AES's spanking new computer-controlled telescope, able to take pollution readings from the moon, planets and stars. With nearly a quarter of a million dollars worth of equipment in the Observatory, it deserves three stars in the Michelin Guide!



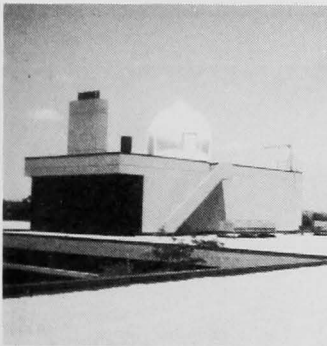
In the south west corner sits a pyranometer, also mounted — you guessed it — on a Suntracker. The ground-based "weather monster" does a mocking dance.



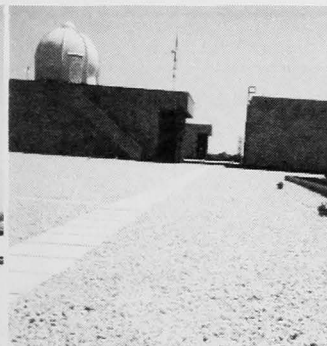
Here's a close up of a sunshine sensor near the Observatory.



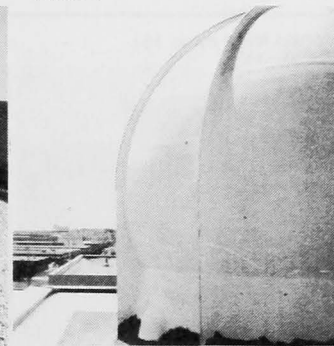
Move east now to penthouse #1. An awkward iron ladder is worth climbing because of the unexpected "crystal ball" on top. It's an older type sunshine recorder and a back-up for the sun sensing experiment (see below left). Electronics technician Fred Koster is seen here consulting his "oracle".



Climbing this high gives you some good general views of the roof. This radome-penthouse combination has an exotic, Arabian Nights look.



The entire roof is strewn with pebbles. (Goodness knows how many millions!) Engineer Thomson says the gravel forms an efficient "inverted roof" and that they cover a layer of styrofoam underneath. Avoid the pebbles by using the concrete stepping stones. Two main north-south paths flank the east and west sides of the building.



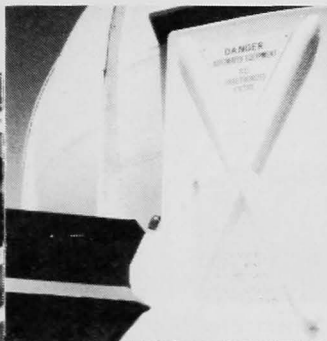
Moving north to penthouse #3 gives you a close-up of a radome. This one is a standard upper air dome used here for aerological research. If you entered the penthouse, you would find it noisy but cool and airy. The dials and ventilator pipes are all connected to the cafeteria.



On the north side see the roof's tallest structure, a massive 25-metre tower, currently used by Data Acquisition branch to perform an international sun sensing experiment. Four sunshine sensors span the tower which also acts as a test antenna for upper air signals from the neighboring radome and as a lightning rod.



A little north of here stare down into the courtyard with its charming fountains, shrubs and tabled patios.



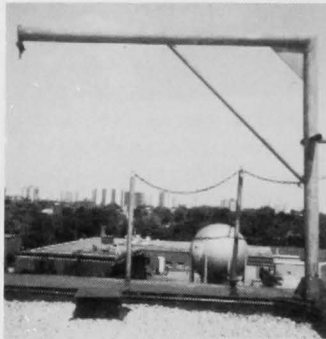
Another radome sits atop the nearby penthouse #5. As indicated, approach with caution because the fibreglass dome contains a fast moving polar satellite tracking antenna.



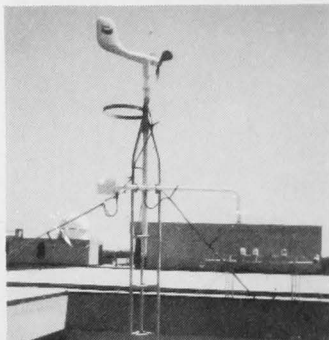
Just down the steps are loud whirring machines that resemble large kitchen stoves. They are cooling units for the computer on the floor below.



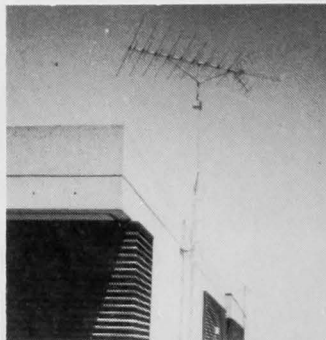
*The radome base contains one of the roof's strangest objects — an ugly brown container resembling a dinosaur's drinking cup. It's used as a spare exhaust for the boiler room.*



*Also near the radome base is this standard metal hoist. Would you believe, the gadget hasn't been used since the building opened! It's easier to lift objects straight up from the street.*



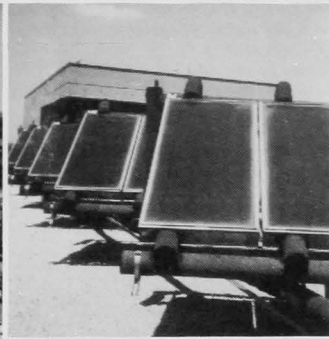
*The panels are flanked by instruments such as this "airplane" anemometer to obtain optimal weather parameters for the project which is a good example of practical DPW and AES research cooperation.*



*Advancing southwards you pass a penthouse with fans, pipes and dials all hooked up to ventilate the auditorium below. The theatre even has its own TV antenna, shown here.*



*Ensnconed in the north east corner is this huge 45 metre chimney acting as the main exhaust for the boiler room. Its principal charm is the creeper plant winding its way up the side.*



*Ignoring the north west penthouse, head south along the Dufferin Street stepping stones to one of the roof's most awe inspiring sights: 90 solar panels all sloping south to obtain maximum sunshine and resembling music stands for a giants' symphony orchestra. On a sunny day the panels supply up to a quarter of the building's hot water. Note the thickly wrapped pipes ensuring an even flow of glycol.*

Passing another very handsome courtyard you could end the tour at penthouse #2, interesting because it supports the small elevator shaft in the south west wing. Imagine if the elevator were one day extended right up to the roof. It would make this level much more accessible to AES staff and less of a never never land.

*Text and photos by Gordon Black*