

the popes' likenesses indicate the power of the papacy. The altar cloths, the paintings and sculptures help to show how fervent the act of worship was during that period.

Because all the pieces in the exhibition were meant to be seen in specific places in Rome, there is a supplementary exhibition of prints showing St. Peter's and the Apostolic and Barberini palaces.

The catalogue, prepared by Catherine Johnston, curator of the show, and noted Bernini scholar Marc Worsdale, contains a coloured illustration of each masterpiece and an historical overview of seventeenth century Rome. An essay focusing on the church in Canada during the period is also included.

Impurity monitoring device

Contaminants or foreign substances in garbage dumps, beverages, foods or in streams, can be detected by a \$2 000-device recently developed and patented by Professor Mohamed Ismail of the University of Waterloo, Ontario.

One of his "multi-cell" sensor machines, which has 24 sensor connections, each capable of monitoring one sample or area, could be used to detect leaching of toxic chemicals in a garbage disposal site, said Professor Ismail. If the device were connected to a stream it could monitor and record any substances dumped into the water and would even register the time they were detected.

Using thermal and electronic principles of chemical physics, the devices heat or reverse the polarity of a substance to determine its natural readings. Variations in readings indicate the presence of a foreign substance. The level of variation indicates its nature.

The "multi-cell" unit, which looks like a component in a stereo system, receives information from 24 wire probes inserted into the substance being monitored.

By inserting probes at various levels of a waste disposal site, the leaching movement of toxins can be determined. Alternatively, a food or beverage company could simultaneously monitor the production quality of two dozen different products.

Professor Ismail said that the hand-held tester could be used, for example, by a gas station selling used oil to a refinery. Each drum could be measured for impurity levels in a matter of seconds so that the seller and buyer know the value of the oil.

The professor has formed his own company to negotiate with producers and marketers of the device.

Portable moisture measure for soil

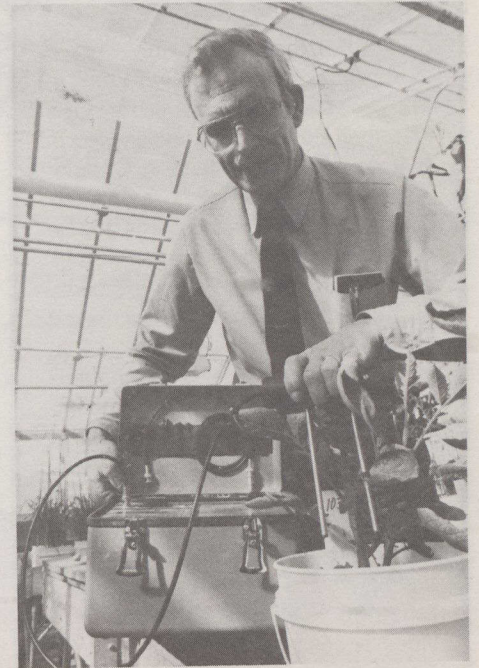
Clarke Topp, a soil physicist with Agriculture Canada's Land Resource Research Institute in Ottawa has developed a device that can easily and quickly measure the water content of soil in the field. Previously soil-moisture measuring techniques involved taking the soil to a laboratory where it was weighed and oven-dried.

The new measuring device has two parallel metal rods which are pushed into the ground. The rods act as a wave guide for high frequency radio waves that are sent into the soil, are reflected from the end of the rods and return along the original path.

Using a compact computer, the new device translates the registered travel time of the wave in the soil into water content percentage, and the reading appears instantly on the display terminal. The more water in the soil, the longer the travel time.

Dr. Topp suggests there is great potential for the device in dryland farming. "It will help answer a farmer's questions such as 'how much soil water did this crop use' and 'can I plant again next spring?'," he said. It could also help farmers decide what crops to plant, and how deeply to reach optimum water content for germination, he added.

Further, Dr. Topp said the instrument can eventually be used for automated irrigation. By setting a number of probes in the ground to the rooting depth in a field and hooking the instrument to a computer, automatic readings will indicate when water is needed and how much. The computer will then turn the irrigation system on and off automatically,



Dr. Topp demonstrates the device he developed to measure the water content of soil.

applying only as much water as needed. This could lessen the effects of soil salinity on irrigated land.

A Canadian firm, Foundation Instruments Inc., initially manufactured 25 soil moisture instruments which have been sold in Canada, the United States and Australia. Most of the units were purchased for scientific research including adapting the technique to soil salinity and moisture content of stored grain and other agricultural products.

Northern Quebec park on new definitive stamp



La Mauricie National Park located some 40 kilometres north of Trois-Rivières, Quebec is featured on the \$5 definitive stamp issued by Canada Post Corporation on March 14. The new stamp replaces the \$5 Point Pelée National Park stamp issued January 10, 1983.

La Mauricie park is in a transition zone between the coniferous boreal forest and the deciduous forest of the St. Lawrence lowlands and contains the eroded remnants of Precambrian mountains dotted with lakes and rivers left by the last Ice Age. It was created in 1970 to preserve part of the Canadian Shield. More than 150 species of bird, many species of fish and several mammals can be found in the park.

The stamp was designed by Quebec artist Lauréat Marois. It shows Lake Wapizagonke, a popular site for canoe-camping.