

### McMaster professor becomes fellow of Royal Society

One of the rarest honours conferred on scholars in the English-speaking world, and held by a mere handful of Canadians, has been accorded Dr. Ronald J. Gillespie of McMaster University's Department of Chemistry. Dr. Gillespie recently received word of his election as a fellow of the Royal Society, Britain's foremost scholarly society and the oldest in Europe. Two other McMaster professors are Royal Society fellows — Dr. H.G. Thode, former president of the university, and Dr. B.N. Brockhouse, Professor of Physics.

Dr. Gillespie's election was for outstanding research in inorganic chemistry and for his contribution to the teaching of that science, which won him in 1972 the College Chemistry Teacher Award of the Manufacturing Chemists Association. A maximum of six North American academics win this distinction each year.

Dr. Gillespie went to McMaster in 1958. He is the author of over 200 scientific publications and a fellow of the Royal Society of Canada and the Chemical Institute of Canada. Over the past several years, he has also been awarded: the American Chemical Society Award for Distinguished Service in the Advancement of Inorganic Chemistry; the Chemical Institute of Canada Union Carbide Award for Chemical Education; the Noranda Award of the Chemical Institute of Canada for Inorganic Chemistry; and, this year, the Chemical Institute of Canada Medal, which will be presented to him next June.

### Impressive record by Canadian satellite

Doctors in an urban university medical centre assist with Canada's first satellite-aided childbirth, at an isolated northern hospital.

Students at Ottawa's Carleton University and Stanford University in California share their lectures, flashed instantly between the two campuses, over a 45,000-mile earth-space-earth link.

Canadian and American radio astronomers achieve a major step forward in techniques for determining the size and

shape of distant galaxies.

These events represent but a small sample of the thousands of hours of experimental transmissions that have been beamed in the past year through Canada's HERMES, the world's most powerful communications satellite.

The Canadian-designed satellite, built in Ottawa, the first such satellite to operate in a new frequency band, at power levels ten to 20 times higher than those of other satellites, was launched from the Kennedy Space Centre in Florida on January 17, 1976. Its high power makes it possible to use much smaller and far less expensive earth stations.

Named after the Greek god of science and eloquence, the \$60-million HERMES has already met the primary mission objectives set for it by the Department of Communications and NASA, when they undertook jointly to build, orbit and experiment with what is said to be the most advanced communications tool ever to be sent into space. It is now more than half way through its design lifetime of two years.

About three dozen groups of experimenters and users (20 in Canada; about 15 in the U.S.) share the use of the satellite on alternate days; to conduct applications experiments in such fields as: telemedicine; tele-education; government administration and operations in remote areas; broadcasting technology; radio astronomy; community interaction; emergency communications; and maintenance of library and public broadcast networks. HERMES has shown that a high-quality colour-television picture can be delivered to a "mini-earth" station with a dish antenna no bigger than a child's toboggan.

### New telemedicine trial

With \$124,000 in financial assistance from the federal Department of Communications, Memorial University of Newfoundland will soon begin a 12-week assessment of satellite links between its St. John's campus and hospitals in St. Anthony and Stephenville, Nfld., as well as Goose Bay and Labrador City, Labrador. Memorial's faculty of medicine and its educational television centre will use HERMES for four to six hours a day, on alternate days, to telecast programs in anaesthesia, cardiology, therapeutic

tics, communications, developmental disorders in children and nursing education. The links will also be used for transmission of medical data and consultation, public health instruction and workshops for social workers on child abuse and neglect.

The university's telemedicine experiment was inaugurated, with an eight-point tele-press conference linking the Communications Research Centre (CRC) in Ottawa with the four hospitals and three Memorial campus locations involved in the experiment.

Other HERMES projects still under way, or about to commence, include: the Carleton-Stanford course-exchange program; the Alberta Native Communications Society's evaluation of satellite-delivered interactive broadcasts among remote communities.

### Leap second

The Bureau International de l'Heure (BIH) in Paris has announced that a leap second had been introduced on New Year's Eve. The leap second is added at 00 hours Universal Time Co-ordinated (UTC), which is midnight at the Greenwich meridian, or 7 p.m. EST in Canada. In 1976, the astronomical time-scale, which is measured by the rotation of the earth, was slow by one second with respect to the atomic time-scale UTC. Because optical navigation requires astronomical time, the leap second is introduced when necessary to keep the difference between the two scales to less than one second. This insures that no serious navigation error will occur as a result of differences in time. The BIH has also announced that a small correction has been made in the rate of the atomic time-scales. Measurements made by the primary-cesium atomic standards at the standards laboratories (the National Research Council in Canada, the National Bureau of Standards in the United States and Physikalisch Technische Bundesanstalt in West Germany) showed that the rate of UTC was too high. With the error removed, which amounts to a correction of 32 millionths of a second in one year, the new rate will be the same as that of the Canadian primary-cesium standard clock, CsV, at NRC in Ottawa.