

UNIVERSITY NEWS BEAT

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CRESS scientists examine Canex experiments data

The safe return of shuttle flight 41-G has sent Canadian scientists into a huddle over the results of the Canex experiments on board.

Ten experiments covering space technology, space science and life science were on Marc Garneau's mission plan and York's faculty and grad students have directly contributed to several.

SPEAM, the Solar Photometer and Earth's Atmosphere Measurements experiment, was designed to measure the sun's brightness without the masking effects of our dirty atmosphere. Using this light level, scientists on earth will be able to measure the altitude profiles of aerosols, ozone, water vapour and nitrogen dioxide and calibrate the instruments in the ground-based Background Air Pollution Monitoring (BAPMON) system.

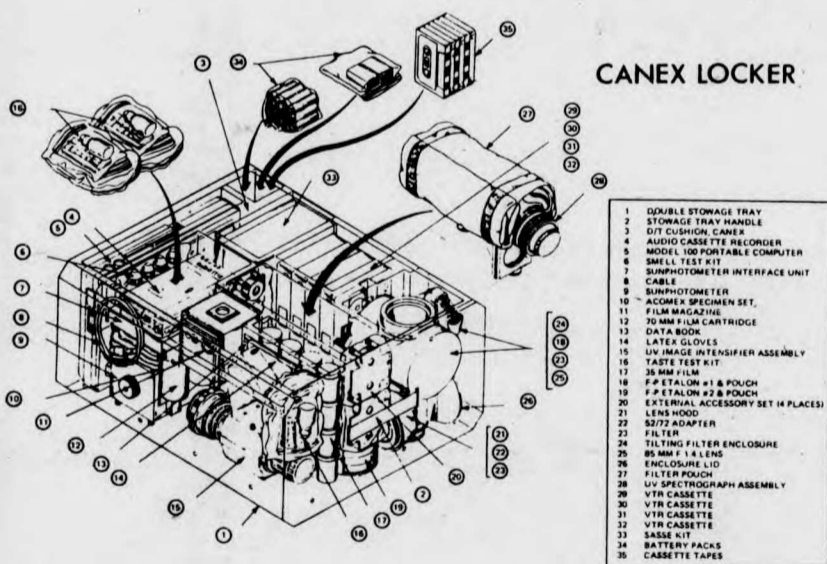
SPEAM data will assist in the study of airborne pollutants which may contribute to acid rain. Professor R. W. Nicholls, Director of CRESS, project scientist Mark Cann and chief investigator W. F. J. Evans of the Atmospheric Environment Service and York will be analyzing the results as part of a team with representatives from McMaster, AES and the National Research Council Astronaut Corps.

OGLOW was an experiment designed to study an unexpected

light phenomenon or glow which occurs whenever maneuvering thrusters are fired. This reddish glow surrounds the shuttle for a few seconds after every burn. It decays rapidly but may interfere with future experiments. Garneau pointed an image intensifier at the glow and photographed it through narrow interference filters. Project scientist W. Gault and grad student Brian Solheim are members of the science team.

VISET, the Space Vision System Experiment Development Tests, were designed to provide television footage of the deployment of the Earth Radiation Budget Satellite. This footage, after analysis and when combined with a state of the art machine vision system, will improve the mechanical arm's ability to capture, berth or assemble large satellites or other space assemblies.

Targets mounted on ERBS were tracked by camera and transmitted to Mission Control at the Johnson Space Centre where a prototype system calculated the satellite's position, orientation and rate of movement at a rate of thirty times per second. Steve MacLean, member of the Canadian Astronaut Corps and York Alumnus, is part of a team concentrating on the development of this space technology.



Space science slashed 50%

Budget cuts will affect university research

In a recent cost cutting move, the new Conservative government has cut the space science budget in half and the repercussions will affect university research and development for both faculty and students.

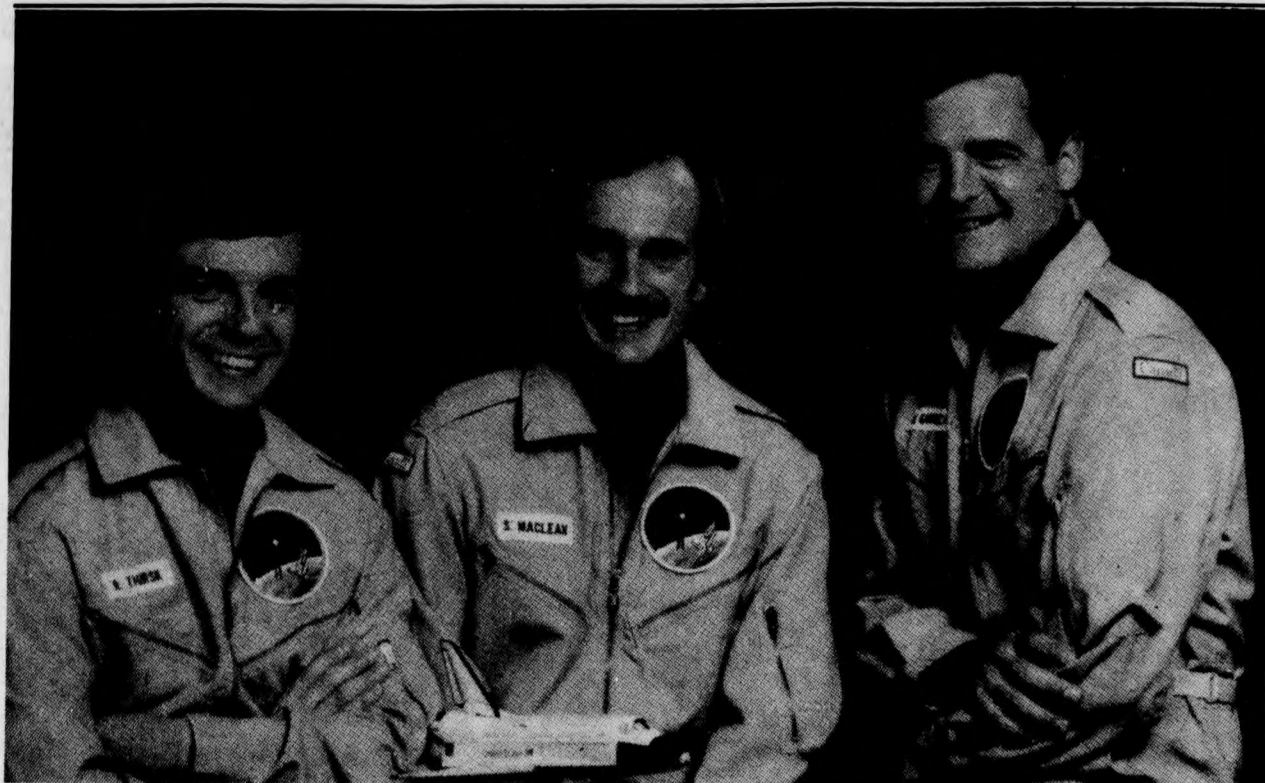
The new minister of state for science and technology, Tom Siddon, has changed the emphasis from research and development to applied technology in order to develop the technical

expertise needed to buy into international science projects.

Balloon and rocket studies of the upper atmosphere have been the cornerstone of our space science. Projects could be proposed, carried out, and evaluated within the year. An experiment that failed to produce acceptable results could be rescheduled, refined and relaunched in relatively short order. This allowed grad students and faculty to work at the cutting edge of science.

Many elements of the rocket program have counterparts in the Spacelab and Shuttle projects. Engineers designing new space systems do their testing in the balloon and rocket program.

York depends heavily on the balloon and rocket for its basic research programs and will be significantly affected by the funding cuts. A response to the minister is currently being formulated.



Canadian astronauts Robert Thirsk, Steve MacLean and Marc Garneau will be appearing at York Tuesday, December 4, 1984.

York faculty and grad students working at the cutting edge of science

The recent shuttle flight of Canadian astronaut Marc Garneau and the Canex package of experiments has caught the imagination of people who see a future in the stars.

Coupled with the success of the Canadarm it showcases the scientific and technical expertise available in Canada. The Centre for Research in Experimental Space Science (CRESS) at York has made a significant contribution to world-wide respect for our abilities.

CRESS has about forty grad students researching, designing experiments and analysing the results in a unique multi-disciplinary format with a great deal of latitude and flexibility. The centre was created to enable research by chemists, physicists, pure and applied mathematicians, engineers and others in programs suited to their specific areas of interest.

The reward for innovative work in these specialty fields is a better than average chance of finding employment after graduation. "I believe our students tend to get jobs quickly," said Professor R. W. Nicholls, Director of the centre and a leading voice of Canadian space science.

The selection of six Canadian astronauts including Steve MacLean (Hon. B.Sc. in Physics 1977, Doctorate in Astrophysics 1983, both at York), has driven home the point that this university has been an active participant in space science and has a role to play in shaping the country's long term future.

Defining this has been very difficult because of our small population and limited funding base. The nation has been forced to select amongst a limited range of projects with the criteria for decision based on whether Canada will maintain some level of exclusivity in the chosen specialty. The field also must provide international leverage so we are

invited to participate in joint programs which will yield results benefitting Canada without having to carry all the financial burden.

York's long tradition of magnetospheric studies stems from the location of the northern magnetic pole entirely within Canada. Our involvement began with rocket and balloon studies launched from Fort Churchill which is under the centre of the auroral zone. Upon its closing as a launch site, experiments continued in an expeditionary format with mobile launchers and from Gimli, Manitoba. More recently Cape Parry, which is under an ionospheric cleft, has been the site of work of Professor Roy Koehler on electrical phenomena associated with the upper atmosphere.

trial and automobile exhaust, as well as the long term effect of photozied chloroflourocarbon compounds.

Professor Gordon Shepherd was advised recently by NASA that his proposal for a Wind Imaging Interferometer (WINDII) has been accepted. It will be part of a satellite mission to be launched in 1989 in collaboration with France. CRESS will be playing a major role in the \$650 million mission, considered NASA's most ambitious atmospheric mission of the decade. Highly sophisticated remote sensing instruments for the spectral region from x-rays to microwaves will stream data to the Goddard Space Flight Centre. A computer terminal in CRESS will be able to directly access the satellite's database.

Two new space science projects are currently in the planning stages.

Nicholls is the offician Canadian observer of the NASA Working Group on scientific uses of the Space Station set for 1992. At present the Canadian space community is setting up a parallel infrastructure to the American one and has struck four working groups in the fields of astronomy and astrophysics, magnetospheric physics, life science physics and microgravity.

These groups will be working to define Canada's contribution to the scientific uses of the space station.

As well, CRESS will be collaborating with the Harvard College observatory in a Solar and Terrestrial Spectrometer study.



The chemistry of the stratosphere, which is at a height of approximately thirty kilometres, is the focus of York professor Don Hastie.

Using optical and chemical methods, Hastie is concerned with the effects of nitrogen oxides, a component of indus-

Centre for Research in Experimental Space Science

presents

A program of films and discussion with visiting members of the Canadian Astronaut Team

**Dr. Marc Garneau
Dr. Robert Thirsk
Dr. Steve MacLean**

Tuesday, December 4, 1984 from 10:15 a.m. to 12:15 p.m.
in Burton Auditorium
4700 Keele St., North York

A limited number of tickets are available for the York community. Available from the Faculty of Science, Room 108 Steacie Science Library. Tickets must be picked up in person

For further information, telephone the Communications Department, 3441.