

Colonizing the moon a problem of money

By Jim Carlisle

"It will be a long time before we see self-contained space colonies," concluded NASA biologist John Billingham at the "energy Flow Through Biological Systems" symposium in Stedman last weekend.

Sponsored by the Biology Grad Students, scientists spoke throughout Saturday on energy interactions in systems ranging from single cells to the whole environment. They placed a strong emphasis on computer simulation and modeling techniques.

The final speaker, Dr. Billingham of the National Aeronautics and Space Administration, pointed out how much we still have to learn before we can construct even a simple ecosystem.

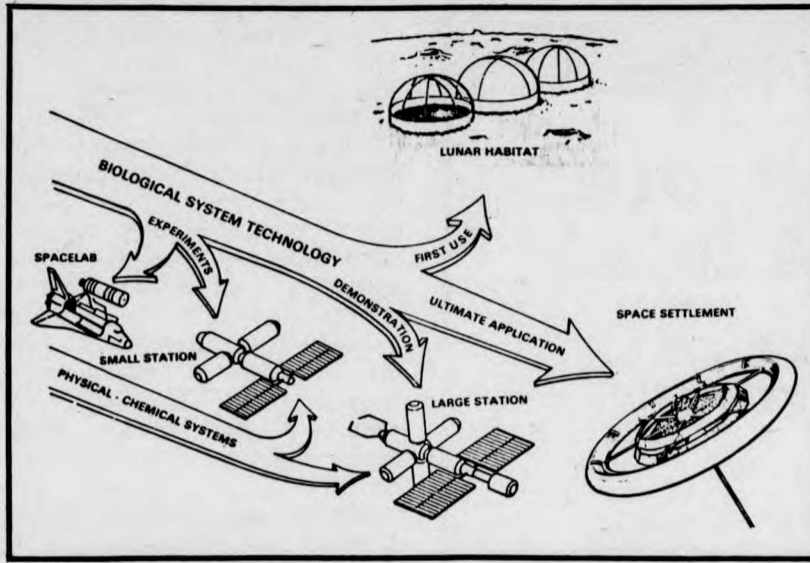
Dr. Billingham and his group at NASA are investigating the problems involved in colonizing the moon and deep space. Because it takes 8,000 kg. of consumables to

support one person for a year and each kilogram requires 100,000 kg. of rocket structure to lift it off the earth, even large vehicles assembled in space are impractical for long missions.

The only solution is to build a closed ecosystem where all consumables i.e. air, water and nutrients are constantly recycled. Power in such a system would come from the sun. In effect this involves building a miniature earth for the astronauts to live in.

The first problem in designing such a system says Billingham, is the determining of man's complete physical needs in chemical terms. The second is deciding what mix of plants, animals and machinery would best achieve a Closed Ecological Life Support System (CELSS in NASA jargon). Billingham's group is still accumulating the basic knowledge required before they can consider constructing a model system.

In contrast to this high



technology approach the Soviets are employing the same brute force, shotgun philosophy evident in their early satellite launchings. They are already flying crude experimental systems with plants providing some of their cosmonauts needs in space.

In a lively discussion after the formal lectures Dr. H.T. Odum, an eminent ecologist at the University of Florida, suggested that the NASA team should try learning from the Russian approach. Odum suggested that the NASA group construct closed ecosystems on earth, modifying them as they fail until a workable system is found. Odum has done this himself on a small scale and he stated that the engineers must try experimenting even if they don't fully understand the systems they are building.

Billingham replied that if NASA sends poorly understood life

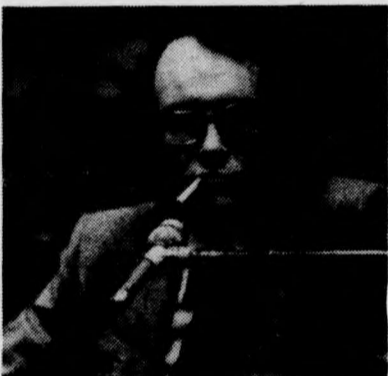
support systems into space "we could lose a lot of people".

Finally Billingham admitted that part of the problem is political and economic. "In the 1960's everyone was talking about going to Mars and many research projects were started." However, as the magnitude of the problem became apparent and the amount of money required was understood, NASA slowed down research.

To justify the expense "we need strong reasons for sending people into space" according to the scientist. To this end other NASA groups are investigating the feasibility of constructing huge orbiting solar collectors to supply power for the earth, presumably serviced by space colonists. The advantages of precision manufacturing at zero-gee are being assessed. Billingham suggested that the solution may itself turn out to be political. As relations between the United States and the U.S.S.R. become closer the politicians may attempt to cement them through massive joint space expeditions.

"There is no reason why we can not have fully developed, mature societies in space," said Billingham. "eventually travelling to space colonies will be as commonplace as going from Europe to North America is now."

Mayor John Sewell speaks on cutbacks, tolerance and transit in York's bearpit



Randy Bregman photos

Three faces of John Sewell

By Kim Llewellyn
"The jargon is not cutbacks, it's restraint," said Toronto Mayor John Sewell, referring to government funding of universities, in his opening remarks to students gathered around the Bearpit last Thursday.

"Instead of looking at restraint as a management tool, they are looking at it as winners and losers. It is the essence of politics. Restraint really shows who is the weakest in society."

"The problem is they have to divide up a smaller pie. They should be talking about how to make the pie larger."

Sewell said the economic problems of Canada are two-fold.

"One is the foreign domination of our economy. The foreign investment review board actually encourages foreign investment."

"The other thing is, to devise an industrial strategy. The federal government doesn't care what the Science Council says. The council argues for a lot more research and development in this country."

Sewell's comments were brief. He spent the rest of his 45 minute visit fielding questions from the audience.

"What were you trying to prove by speaking at the Body Politic demonstration?" he was asked.

"I think the Mayor of Toronto should be concerned about tolerance," he answered. "Some public figure should step forward and speak out against false distinctions between people."

When queried as to why university students must pay more than high school students for TTC fares, Sewell replied he didn't know the answer, but preferred to deal with the question of helping all riders generally rather than focussing on one specific group.

He said the decision to increase fares from 55 to 60 cents has meant the loss of TTC riders.

"Of 98 million dollars spent on the TTC last year, 34 million when towards the operation of the

system, while 64 million went towards expanding the system. Where are the priorities?"

"Instead of the province being interested in putting six million dollars into stabilizing fares, it puts its money into rapid transit and opening up land for development."

"For example, the GO transit has half the ridership of the Dundas streetcar. There is a \$4 subsidy for every single rider on the GO transit. That's opposed to 17 cents a rider subsidy for the Dundas streetcar."

"The reason is obviously that people who live in Mississauga are more important than the people in

the working class areas of Toronto."

On downtown Toronto, Sewell said the Eaton Centre is "really going to kill Yonge Street."

"It is the centralization of retail facilities for national retailers. That's what the Eaton Centre is all about. It takes a lot of capital to get in for a small businessman. It used to be a street of small businessmen."

On the fate of the Toronto islanders: "I'm still negotiating with that fellow, Paul Godfrey. I've advanced very, very reasonable propositions that he's turned down. We may have a settlement in May."

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