Future Physicists Gravitate at SFU

by Peter Stokoe

Eight undergraduates from the Departments of Physics and Engineering-Physics represented Dalhousie at the highly successful Tenth Annual Conference of the Canadian Undergraduate Physics Association, held at Simon Fraser University, October 9 - 13. Most of the credit for the success of the Conference, the most ambitious so far for the Association, must go to the organizers, Jeanne Henry and Mariela Johansen of SFU.

This year's Conference included lectures by Nobel-laureate Dr. Richard P. Feynman, of Caltech, and five eminent Canadian physicists - Drs. R. R. Haering and E. Vogt of UBC, Dr. R. Nicholls of York University, Dr. A. Mooradian of Atomic Energy of Canada Ltd., and Dr. A. S. Arrott of SFU. Dr. A. H. Morrish of the University of Manitoba, President of the Canadian Association of Physicists, also gave a short address of encouragement to the Undergraduate Association and the delegates.

Dr. Feynman, famous for his work in quantum electrodynamics, and, more recently, in high energy physics, has attained particular renown among undergraduates for his "Lectures on Physics", standard reference reading for anyone seriously studying the subject. Dr. Feynman's lecture, "The Fundamental Structure of the Proton" explaining the present state of his "quark" theory of elementary particles, was one of the highlights of the Conference, but his enthusiastic participation in other events, and his willingness to meet students, also added greatly to making a rewarding conference for everyone concerned.

Dr. Haering, chairman of the UBC physics department, led off the Conference with a lecture in which he called for physicists to reverse the trend of continually narrowing down the domain of physics, and to be willing to apply their science wherever it is needed along the frontiers of the sciences and arts. Dr. Haering demonstrated this by describing one of his own research interests in "Physics and Archaeology". By recording sites of finds of the mineral obsidian, valued by West Coast Indians, and using physical techniques to identify the sources, Dr. Haering's group is able to map out the trading routes used by B.C. Indians.

The first day of the conference also included a tour of SFU Physics Department, which is mostly involved in research in solid state physics.

Dr. Nicholls was the first lecturer on the second day of the conference, designated "Physics in Canada" day. Dr. Nicholls' lecture, "Spectroscopy in Space", detailed pioneering projects in Canada to use spectroscopy over all accessible bands of the electromagnetic spectrum, not only for astrophysical research, but also to obtain geophysical and earth resources information.

Dr. Mooradian of Atomic Energy of Canada Ltd., lectured on "The CANDU Reactor", comparing the Canadian-developed heavy water, uranium fission reactor with other slow-breeder reactors. Particular attention was paid in the lecture to the potential problems of heavy water supply and radioactive waste management. After the lecture, Dr. Mooradian was questioned about reactor safety, and replied eloquently and at length, concluding that the benefits of nuclear power far outweigh the possible risks, which can never be entirely eliminated.

After a short address by Dr. Morrish, Dr. Erich Vogt gave the final lecture of "physics in Canada" day, on "TRIUMF", a large new cyclotron in its final stages of construction on the UBC campus, which will be used mainly to produce intense beams of mesons (those elementary particles with masses intermediate between the leptons, light particles like the electron, and the baryons, heavy particles like the proton and neutron). Apart from continuing the study of the mesons themselves, the facility will also be used in cancer research and treatment, and materials science research. After Dr. Vogt's lecture there was a tour of TRIUMF, followed, after dinner, by a tour of the UBC Physics Department.

The final full day of the Conference began with Dr. Arrott's lecture on liquid crystals, "Liquids that Resist Splay and Bend and Twist", an area of solid state physics which has recently been receiving great attention by researchers. These liquids made up of long organic molecules with dipole moments which tend to align the molecules parallel to one another, have many interesting properties. A problem which early interested Dr. Arrott was how these molecules would arrange themselves in a spherical droplet. By viewing droplets through a microscope with crossed polarizers, a multi-coloured pattern is seen, from which the molecular alignments can be deduced and checked with theory.

As well as the six main lectures, over forty student papers were presented, including one, on photometric studies of Comet Kohouteck, prepared by the Dalhousie delegation and presented adeptly by Camber Muir, which was well received.

Conference business concluded with the Association's general meeting, at which it was decided that the 1975 Conference would be held at Laval. The new executive are: Mlle. Danielle Verner, Universite de Lavel, President, and Mr. Lawrence Krauss, Carleton University, Vice-President; they may be contacted c/o their physics departments. The Conference ended with a dinner and dance on board M.W. Malibu Princess, while cruising in Vancounver harbour and English Bay.

The annual conference of the Canadian Undergraduate Physics Association provides an opportunity for our undergraduates to gain invaluable experience and contacts in the national and international physics scene. It is to be hoped that this will be of use not only to the delegates themselves, but also to the whole Dalhousie scientific community, and particularly the newly reforming Science Society.

The Dalhousie Undergraduate Physics Society gratefully acknowledges the support of the Canadian Undergraduate Physics Association, the Department of Physics, the Dalhousie Student Union, and the Dean of Arts and Science, in assisting in the travel expenses of the delegration.

[The Dalhousie Undergraduate Physics Society is an informal society of undergraduates devoted to encouraging the interest and participation of Dalhouse students in physics. Society membership is open to anyone who has taken, or is taking a physics course at Dal. Anyone is welcome to seek sanctuary in the Society's room [Room 216, Sir James Dunn Building], and to make use of the services provided there. Further information about the Society may be obtained from Peter Stokoe, Room 216, Sir James Dunn Building.]