

These sessions were intended to give a cross section of upper atmosphere research in Canada. The morning session spanned the breadth of this activity with papers on three broad areas of activity: in the government, universities, and industry. The afternoon session examined one aspect of Canadian work in depth; four papers described research on radiation exchange problems of the atmosphere which are being conducted by one governmental research establishment.

The first paper of the morning session discussed results of the Canadian Alouette I satellite. Three specific findings were described. The first is the occurrence of troughs in the ionosphere which appear as minima in electron density contours at the F-layer. Second, the results of an experiment with a very low frequency receiver revealed that an analysis of the noise measurements made by this receiver will yield the fractional abundance of positive ions and their temperatures in the immediate vicinity of the satellite. Finally, the rather unusual motion of the spin axis of Alouette I was attributed to gravity gradient effects on the long, flexible antennas attached to the satellite.

The second paper covered research currently in progress at the University of Saskatchewan. Several special spectrometers were described for measurements of the aurora; the results of investigations of the upper atmosphere with these instruments were discussed in detail. Finally, a laboratory simulation of the interaction of the solar plasma with the earth's magnetic field was outlined. Results show the possibility of yet undiscovered phenomena in the satellite probing of the earth's radiation belts and magnetic field. The same technique was used to study the ionsheath surrounding a spacecraft, and resulted in a possible method of minimizing the sheath by a very simple technique.

The afternoon session opened with discussion on the results of airborne, infrared solar spectroscopy. Atmospheric constituents were analyzed from spectra in the 2.35- to 3.40-micron region. Water vapor concentration was investigated in detail; statistical evidence was presented for variations in abundance near the tropopause, including limits on this variation in the Cape Kennedy, Florida, area. The second paper dealt with balloon-borne spectral measurements of the infrared airglow at 100,000 feet

from 2 to 9 microns. Due to unexpectedly strong daytime emission, the hydroxyl data were discussed in detail.

The last two papers dealt with oxygen and ozone content in the upper atmosphere. Nitric oxide gas was released from a rocket at altitudes of 75 to 125 kilometers. The resulting chemiluminescent reaction was measured spectrometrically from the ground to determine the profiles of atomic oxygen concentration. Finally, a theoretical study was presented of the ozone distribution in the atmosphere, including vertical profiles in the absence and presence of water vapor for differing geographical locations and seasons.

PHILIP A. LAPP, *Program Chairman*

## Chemistry (C)

The program of the Chemistry Section (C) consisted of two two-session symposia (29–30 December 1964).

**Problems of Hydrogen Bonding.** This symposium, held on 29 December, was arranged by Camille Sandorfy (Université de Montréal). It included six invited speakers who came from Canada, France, and the United States. Topics ranged from theoretical aspects to new developments in hydrogen bonding. For a more complete account of this meeting, see page 910.

**Stereospecificity.** In the introductory lecture, E. L. Eliel (University of Notre Dame) defined the basic terms "stereoselectivity" and "stereospecificity" on thermodynamic grounds and illustrated these concepts with appropriate examples. A. Moscowitz (University of Minnesota) reviewed next the theory of optical rotation and outlined the relations between the molecular geometry and the corresponding rotational strengths.

J. C. Bailar (University of Illinois) discussed stereospecific reactions between optically active coordinating agents and metal ions relating to octahedral chelate complexes; the stereochemical effects were shown to be associated with puckered rings and their biological significance was discussed.

The symposium was highlighted by the lecture of M. Goodman (Polytechnic Institute of Brooklyn) who showed how conformational details of polymers can be deduced on the basis of high resolution nuclear magnetic resonance and from an analysis of rota-

tory dispersion and circular dichroism data.

B. Belleau (University of Ottawa) discussed stereospecificity as it relates to enzyme reactions, including systems in which the enzyme can readily discriminate between two chemically identical hydrogen atoms attached to the same or two contiguous atoms. In the final lecture on protein synthesis, J. H. Spencer (McGill) emphasized the stereochemical relations between the nucleotide sequences of various types of nucleic acids and the translation of the genetic code from nucleic acids to proteins.

ALEC SEHON, *Program Chairman*

## Geology and Geography (E)

Thanks to the leadership of both the active and retiring vice presidents of the section, the program chairman, and Canadian earth scientists in general, the Section E program (27–30 December 1964) at Montreal was unusually successful.

The symposium on Medical Geology and Geography attracted so much attention that a pre-symposium press conference had to be called by Harry Warren and his speakers. The conference was a "sell-out," ran overtime, and reporters filed unusually long stories. A large audience heard five scientists report on their research. In essence, all five declared that only the barest beginnings have been made in understanding the role of trace elements in health, and all speakers underlined the need in this case for the interdisciplinary approach. Indeed, at this very Montreal meeting, Section Nd (Dentistry) presented a four-session program, cosponsored by Section E, entitled "Environmental Variables in Oral Disease." Several of the papers dealt with phenomena, such as variations in soil and sources and purity of water supply, ordinarily under the purview of geographers and geologists.

The two sessions of invited papers in geography, organized by John Parry for the Canadian Association of Geographers, were divided into physical geography and human geography. Visitors had a fine opportunity to learn the details of the almost fantastic growth of Montreal and the ways in which such growth is being shaped by the city's unusual setting.

The forenoon session (29 December) of papers entitled "The Mineral Renaissance of Eastern Canada" traced

# Science

## Chemistry (C)

Alec Sehon

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