tificial radiation belt produced by a recent nuclear explosion at great altitude is also being observed. The instruments in the satellite also measure galactic radio noise and the intensities of very-low-frequency radio emissions in the range 1 to 10 kcy/sec.

The design and construction of the satellite was carried out by the Canadian Defence Research Telecommunications Establishment with assistance from NASA (which was responsible for the final testing and launching of the equipment) and from Canadian industry.

The Alouette satellite represents a brilliantly successful effort in which international cooperation in scientific experiments in space may be seen working at its best.

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Bibliography and Notes

E. S. Warren, "Sweep frequency radio soundings of the topside of the ionosphere," *Can. J. Physics* **40**, 1692 (1962).

"Alouette satellite 1962 Beta Alpha One" (Canadian Defence Research Board, Ottawa, 1962).

"Space Systems: Canada's Alouette. . . .", *Missiles and Rockets* (24 September 1962), p. 35.

The following papers were included among those presented at the URSI-IRE meeting: G. E. Lockwood, "Plasma and cyclotron spike phenomena observed in topside ionograms"; G. L. Nelms, "Scale heights of the upper atmosphere from topside soundings"; G. L. Nelms and E. S. Warren, "Diffusing electromagnetic radiation."

This paper is based on information presented in papers read at the URSI-IRE meeting in Ottawa, 15–17 Oct. 1962, by a number of Canadian scientists, and on discussions with J. H. Chapman, G. L. Nelms, J. S. Belrose, and G. E. Lockwood. Goddard Space Flight Center (NASA) provided Fig. 1 and a slide from which Fig. 2 was adapted.

Forthcoming Events

February

10–15. **Management** Function in Research and Development, conf., Pasadena, Calif. (Management Development Section, Industrial Relations Center, California Inst. of Technology, Pasadena)

11–14. American Soc. of **Heating, Refrigerating, and Air-Conditioning Engineers**, New York, N.Y. (R. C. Cross, 345 E. 47th St., New York 17)

11–14. Industrial **Lubrication**, intern. conf. and exhibit, London, England. (E. V. Paterson, Scientific Lubrication, 217a Kensington High St., London W.8)

11–15. Quantum **Electronics**, intern. symp., Paris, France. (Secrétariat, Troisième Congrès International d'Electronique Quantique, 7 rue de Madrid, Paris 8e)

12–14. **Lysozomes**, symp. (by invitation), London, England. (Ciba Foundation, 41 Portland Pl., London W.1)

13–15. **Electrochemistry**, 1st Australian

conf., part I, Sydney, Australia. (F. Gutmann, Physical Chemistry Dept., Univ. of New South Wales, Kensington, N.S.W., Australia)

13–16. National Soc. of College Teachers of **Education**, Chicago, Ill. (E. J. Clark, Indiana State College, Terre Haute)

14–15. American Soc. for **Quality Control**, Textile and Needles Trades Div., annual conf., Clemson, S.C. (H. F. Littleton, c/o Charles H. Bacon Co., Lenoir City, Tenn.)

15–14 Apr. **Aeronautics and Space**, intern. exhibition, São Paulo, Brazil. (Santos Dumont Foundation, Avenida Ipiranga N°. 84, São Paulo)

16–23. Caribbean **Dental** Convention, Port of Spain, Trinidad. (A. V. Awon, 43–45 Frederick St., Port of Spain)

17–21. Technical Assoc. of the **Pulp and Paper** Industry, annual, New York, N.Y. (TAPPI, 360 Lexington Ave., New York 17)

18–20. American **Standards** Assoc., natl. conf., New York, N.Y. (ASA, 10 E. 40 St., New York 16)

18–20. **Biophysical** Soc., annual, New York, N.Y. (A. Mauro, Rockefeller Inst., New York)

18–20. **Electrochemistry**, 1st Australian conf., part II, Hobart, Tasmania. (J. N. Baxter, Chemistry Dept., Univ. of Tasmania, Hobart)

18–25. Expert Committee on **Food Additives**, FOA/WHO, Rome, Italy. (Intern. Agency Liaison Branch, Office of the Director General, Food and Agriculture Organization, Viale delle Terme di Caracalla, Rome)

19–22. **Radiochemistry**, inter-American conf., Montevideo, Uruguay. (Pan American Union, Washington 6)

20–22. Fundamental **Cancer** Research, annual symp., Houston, Tex. (L. Dmochowski, Section of Virology and Electron Microscopy, M. D. Anderson Hospital, Houston 25)

20–22. **Solid-State Circuits**, intern. conf., Philadelphia, Pa. (F. J. Witt, Bell Telephone Laboratories, Inc., Murray Hill, N.J.)

20–23. National Assoc. for Research in **Science Teaching**, Washington, D.C. (J. D. Novak, Biological Science Dept., Purdue Univ., Lafayette, Ind.)

20–24. Diseases of the **Chest**, intern. congr., New Delhi, India. (M. Kornfeld, American College of Chest Physicians, 112 E. Chestnut St., Chicago 11, Ill.)

21–22. American Soc. for **Quality Control**, regional conf., Las Vegas, Nev. (S. R. Wood, Dept. 61, Bldg. 160, Aerojet-General Corp., Azusa, Calif.)

22–23. American **Psychopathological** Assoc., annual, New York, N.Y. (F. A. Freyhan, c/o St. Elizabeths Hospital, Washington 20, D.C.)

23–28. American Soc. for **Testing** and **Materials**, Atlantic City, N.J. (H. H. Hamilton, 1916 Race St., Philadelphia 3, Pa.)

24–25. Unit Processes in **Hydrometallurgy**, symp., Dallas, Tex. (F. T. David, Colorado School of Mines, Golden)

24–27. **Diffusion**, intern. conf., Palm Springs, Calif. (J. A. Biles, Univ. of Southern California, School of Pharmacy, Los Angeles 7)

24–28. American Inst. of **Mining, Metallurgical, and Petroleum Engineers**, annual, Dallas, Tex. (E. Kirkendall, AIME, 345 E. 47 St., New York 17)

25–27. Advanced **Marine Engineering** Concepts for Increased Reliability, symp., Ann Arbor, Mich. (G. L. West, Jr., Dept. of Marine and Nuclear Engineering, Univ. of Michigan, Ann Arbor)

25–1. **Environmental Engineering**, natl. conf., Atlanta, Ga. (W. H. Wisely, American Soc. of Civil Engineers, 345 E. 47 St., New York, N.Y.)

26–27. **Dairy Engineering**, natl. conf., East Lansing, Mich. (C. W. Hall, Dept. of Agricultural Engineering, Michigan State Univ., East Lansing)

26–1. Society of **Plastics Engineers**, annual technical conf., Los Angeles, Calif. (G. P. Kovach, Foster Grant Co., 289 N. Main St., Leominster, Mass.)

27–3. American College of **Cardiology**, Los Angeles, Calif. (P. Reichert, 350 Fifth Ave., New York 1, N.Y.)

28–2. Experimental Aspects of **NMR Spectroscopy**, Pittsburgh, Pa. (W. A. Straub, Applied Research Laboratory, U.S. Steel Corp., Monroeville, Pa.)

March

1–3. **Developing Brain and Binding Sites** of Brain Biogenic Amines, intern. symp., Galesburg, Ill. (H. E. Himwich, Research Div., Galesburg State Research Hospital, Galesburg)

2–6. Canadian Assoc. of **Radiologists**, annual, Quebec, Canada. (J. L. Léger, 1555 Summerhill Ave., Montreal 25, P.Q., Canada)

4–6. Association of **Iron and Steel Engineers**, western meeting, Los Angeles, Calif. (T. J. Ess, 1010 Empire Bldg., Pittsburgh 22, Pa.)

4–6. **Wildlife Management** Inst., Detroit, Mich. (C. R. Gutermuth, 709 Wire Bldg., Washington 5)

4–8. **Analytical Chemistry and Applied Spectroscopy**, 14th annual, Pittsburgh, Pa. (W. A. Straub, Applied Research Laboratory, U.S. Steel Corp., Monroeville, Pa.)

4–9. **Astronautics**, 3rd Inter-American symp., São Paulo, Brazil. (Symp. Secretariat, Sociedade Interplanetaria Brasileira, Caixa Postal 6450, São Paulo)

5–7. **Plant Engineering and Maintenance**, 4th southeastern seminar, Charlotte, N.C. (A. Brown, Service Engineering Associates, Inc., P.O. Box 2665, Atlanta, Ga.)

5–8. Committee on **Textile Materials**, New York, N.Y. (American Soc. for Testing and Materials, 1916 Race St., Philadelphia 3, Pa.)

5–9. Application of **Radioisotopes in Hydrology**, symp., Tokyo, Japan. (IAEA, 11 Kärntner Ring, Vienna 1, Austria)

6. American Assoc. of **Psychiatric Clinics for Children**, annual, Washington, D.C. (American Psychiatric Assoc., 1700 18th St., NW, Washington 9)

6–9. American **Orthopsychiatric** Assoc., annual, Washington, D.C. (American Psychiatric Assoc., 1700 18th St., NW, Washington 9)

7–9. German Soc. of **Endocrinology**, 10th symp., Vienna, Austria. (H. Nowakowski, Deutsche Gesellschaft für Endokrinologie, c/o II. Medizinische Universitätsklinik, Hamburg-Eppendorf, Germany)

9. **Linguistics**, 8th annual, New York, N.Y. (L. Pap, State Univ. College, New Paltz, N.Y.)

10–13. American Inst. of **Chemical Engineers**, New Orleans, La. (J. Henry, 345 E. 47th St., New York, N.Y.)

10–20. **Nutrition** Problems in Latin America, 5th U.N. Food and Agriculture Organization conf., Lima, Peru. (Intern. Agency Liaison Branch, Office of the Director General, Viale della Terme di Caracalla, Rome, Italy)

11–16. Numerical **Weather Forecasting**, World Meteorological Organization/International Union of Geodesy and Geophysics, intern. symp., Oslo, Norway. (World Meteorological Organization, Geneva, Switzerland)

14. Assoc. of **Vitamin Chemists**, Chicago, Ill. (H. C. Spruth, Abbott Laboratories, 14th and Sheridan, North Chicago)

14–15. Advanced **Air-Cooled Reactor**, symp., London, England. (Secretary, British Nuclear Energy Soc., 1–7 Great George St., London, S.W.1)

14–15. Central **Neuropsychiatric Hospital** Assoc., annual, Chicago, Ill. (American Psychiatric Assoc., 1700 18th St., NW, Washington 9)

15–16. Pacific **Computer** Conf., Pasadena, Calif. (E. Schubert, Systems Div., Beckman Instruments, 2400 Harbor Blvd., Fullerton, Calif.)

17–24. **Military Medicine and Pharmacy**, 17th intern. congr., Caracas, Venezuela. (Organizing Committee, c/o Dirección del Servicio de Sanidad Militar, Hospital Central de las Fuerzas Armadas, Urbanización San Martín, Caracas)

18–22. American Soc. for **Metals**, western metal exposition and congr., Los Angeles, Calif. (W. J. Hilty, ASM, Metals Park, Ohio)

18–28. International **Astronomical** Union, 20th symp., Canberra, and Sydney, Australia. (D. H. Sadler, c/o Royal Greenwich Observatory, Hertsmonceux Castle, Hailsham, Sussex, England)

20–22. **Bone Dynamics**, intern. symp., Detroit, Mich. (H. M. Frost, Dept. of Orthopaedic Surgery, Henry Ford Hospital, Detroit 2)

20–29. **Quantitative Spectroscopy** at Elevated Temperatures and Selected Applications in Space Science, Pasadena, Calif. (D. L. Wennersten, Air Force Office of Scientific Research, Washington 25)

21–24. International Assoc. for **Dental Research**, 41st annual, Pittsburgh, Pa. (J. Muhler, 1120 W. Michigan St., Indianapolis 2, Ind.)

21–24. International College of **Applied Nutrition**, Pasadena, Calif. (D. C. Collins, 7046 Hollywood Blvd., Suite 503, Los Angeles 28, Calif.)

24–28. Institute of **Radio Engineers**, intern, convention. New York, N.Y. (G. W. Bailey, 1 E. 79 St., New York)

25–27. High Frequency **Communication**, convention, London, England. (Secretary, Institution of Electrical Engineers, Savoy Pl., London, W.C.2)

25–28. American Assoc. of **Petroleum Geologists**, 48th annual, Houston, Tex. (J. M. Parker, Kirby Petroleum Co., 518 Patterson Bldg., Denver 2, Colo.)

25–28. Society of Economic **Paleontologists and Mineralogists**, Houston, Tex. (L. C. Pray, Ohio Oil Co., Box 269, Littleton, Colo.)