The main results of the IRAS mission as described here relate to the distribution and properties of solid objects ranging from asteroids to dust particles that go down in size to polycyclic aromatic hydrocarbon molecules 3 Å across. At 12 and 25 μm, emission from the sky is dominated by zodiacal dust at 150–300 K which is a troublesome source of seasonally-varying background in galactic and extragalactic studies. Galactic emission (including high-latitude ‘cirrus’), as described here by E. R. Deul, P. Cox & P. G. Mezger, J.-L. Puget, F. Boulanger et al., dominates at 100 μm and is detected at the three other IRAS wavelengths as well. It is correlated with gas column density and with the strength of the interstellar radiation field and a quarter to a third of all starlight in the Galaxy is absorbed and re-radiated by dust. Point sources superposed on these backgrounds include asymptotic giant branch stars with dust shells which elegantly outline the inner disc and bulge (H. J. Habing), high-mass proto-stars, low-mass proto-stars embedded in molecular cloud cores and T Tauri stars. Infrared spectra of these infant stars, which often have bipolar outflows of molecular gas, provide evidence for the presence of dusty discs around the low-mass objects as well as cooler dust from remnants of the dispersing molecular cloud (C. A. Beichman) and these objects have been quite convincingly modelled by Frank H. Shu and his colleagues. Star-forming regions make only a minor contribution to the total emission from our Galaxy, but a more significant one in nearby barred spirals (N. A. Devereux and T. G. Hawarden et al.).

Most of the galaxies detected by IRAS are ordinary disc galaxies radiating by similar processes to our own, but 5 per cent or so are ultra-luminous (L > 10^{12} L_\odot), frequently interacting or merging systems with starburst or Seyfert-type emission lines; a few are recognizable quasars and more may be buried ones. These issues are discussed by D. B. Sanders et al., Colin Norman, Bruce Elmegreen, R. D. Wolstencroft et al., A. Lawrence and R. D. Joseph, among others. The cosmological section of the proceedings concerns background radiation, theories of galaxy formation and biassing, evolution of radio and starburst galaxies, the IRAS dipole and the extragalactic distance scale, and it includes notable contributions by B. J. Carr, Joseph Silk and G. Efstathiou (on the theoretical side) and by T. Matsumoto, P. L. Richards, J. S. Dunlop & M. S. Longair, M. Rowan Robinson and M. A. Strauss & Marc Davis (on the observational side). Large values of Ω (>0.4 anyway) previously deduced from IRAS data are confirmed by more careful analysis and by a redshift survey. The most intriguing results of this section concern recent background measurements which suggest a rise in temperature shortward of 1 mm wavelength and (still more tentatively) a line at 2 μm.

Altogether a highly commendable production.—Bernard Pagel.


When a solar flare occurs, the high temperature, low density coronal atmosphere of the Sun is violently disturbed, the most energetic phenomena observed in the Solar System. Yet, before this dramatic event, there is little indication of the outburst that is to come and after the flare the corona may settle down to a configuration that is not especially different from that observed prior to the event. The solar corona is permeated by a magnetic field which is generally either in the form of loops, with feet anchored in the dense photospheric atmosphere, or open field lines stretching from the photosphere to far out from the Sun. The presence of this field is intimately related to the occurrence of a flare, the magnetic field