

Technology transfer

High-tech for Britain

A NEW company specializing in technology transfer was launched in Britain last week. The company, Business Application of Science and Technology — BASE — aims to take an active managerial role in seeking new applications for research results and also to become a source of investment capital.

The chairman of BASE International is Sir Henry Chilver, vice-chancellor of Cranfield Institute of Technology and chairman of the government's Advisory Council on Applied Research and Development (ACARD). BASE is developing a network of contacts in universities and government and corporate laboratories and will assess technical and commercial opportunities for innovation. Where opportunities are identified, BASE will buy or obtain under licence technologies to place with its client companies. Financial returns will be from royalties and, in some cases, capital growth.

By seeking to introduce new technologies to existing companies, BASE hopes to avoid some of the problems that beset would-be innovators. It aims to bridge the "development gap" that has been identified in a number of studies of innovation in Britain, not least those of ACARD. BASE says it will acquire technologies from a wide range of sources and will where necessary sponsor further research and development to match them to market requirements.

BASE starts life with a modest £450,000 of capital, subscribed mainly by the Royal Life Insurance Group, TR Technology Investment Trust and the BP Pension Fund. The Cranfield Institute of Technology is also an investor, through its own research and development company. BASE's managing director, Mr John Castle, has a personal stake of £20,000. There are plans to double the capital base as the company grows and BASE will seek additional capital from its shareholders as it is required, on a project-by-project basis.

BASE will certainly benefit from the government's decision to rescind the first option on much publicly-funded research that is now enjoyed by the British Technology Group. BASE will have no preferential access to publicly-funded research. The company has already identified a number of projects in which it might wish to invest, and Sir Henry said last week that the civil application of defence technologies was a area of interest. One project BASE is examining was originally developed at the Royal Signals and Radar Establishment.

BASE looks on the face of things like a textbook model for innovation, and the connection with ACARD is very apparent in BASE's approach. The low uptake of defence technology has been criticized widely in recent years and defence

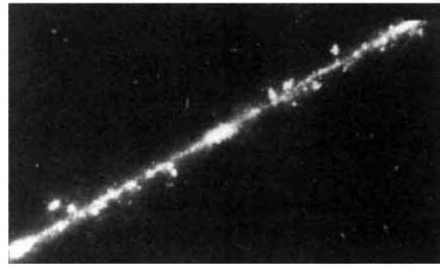
establishments are thought to be fertile fields for entrepreneurs. Last September, Mr Michael Heseltine, Secretary of State for Defence, announced that he was inviting technology brokers into defence establishments to examine technologies with possible commercial applications, and through Sir Henry's connection with Cranfield, BASE will have a direct route to a substantial pool of university engineering research. Industry sources were impressed last week by the account BASE gave of itself.

Tim Beardsley

Galactic centre seen

THE first results from the Infrared Astronomical Satellite (IRAS) were announced last week at simultaneous press conferences in the United States, the Netherlands and the United Kingdom — the three countries running the mission.

The photograph below shows IRAS's view of 45 degrees of the galactic plane, including the galactic centre, completely obscured at optical wavelengths by interstellar dust. The bulge is the galactic centre, while the knots and blobs are giant clouds of gas and dust heated by nearby



stars. The data confirm that star formation is taking place — the gravitational contraction that precedes the onset of energy generation by nuclear reactions releases heat, so that proto-stars are strong infrared sources.

Other newly discovered objects include three continuous dust rings within the Solar System, a broad central band and two rings 9° above and below it, lying between Mars and Jupiter at a distance of 2.3 to 3.3 astronomical units. One theory for their origin is that a comet, with an orbital inclination of 9° to the plane of the Solar System, collided with an asteroid. IRAS has also observed many new regions of star formation, a ring of large dust particles around the star Vega — thought to be a proto-solar system — and galaxies in which intense bursts of star-formation are taking place. The latter also appear to be the most likely explanation for unidentified objects — objects for which no previously observed counterpart has been recorded. Such galaxies would produce a great amount of energy in the infrared but could be so far away that the optical radiation is too dim to have been observed.

Philip Campbell

Life in outer space

Infrared data debugged

THE conflict between Professors Sir Fred Hoyle and Chandra Wickramasinghe and their critics, astronomers and spectroscopists sceptical of the claim that life is to be found in interstellar space, was left unresolved last week. A meeting arranged by the Royal Astronomical Society was marred by a lack of time for free discussion. But at the end, none of the protagonists had conceded ground.

By Professor Wickramasinghe's account, he and Hoyle were persuaded of the existence of interstellar microorganisms by the failure (as he described it) of more conventional models of interstellar grains to match features in astronomical spectra. Specifically, the astronomical evidence consists of (1) an infrared absorption feature at 3.4 micrometres wavelength observed in the spectrum of a star (IRS-7) known to be obscured by interstellar dust; (2) features at about 10 micrometres in the thermal radiation spectra from the Trapezium nebula; (3) the variation of the interstellar extinction of ultraviolet radiation with wavelength and, in particular, a claimed feature in this variation at a wavelength of 2,800 Å.

Hoyle and Wickramasinghe have measured the absorption properties of *Escherichia coli* and "microorganisms from a nearby river" and, as reported in several publications, have managed to obtain good fits to the astronomical observations with, they claim, a success far exceeding that of modellers using more conventional materials.

Various aspects of this work were attacked by speakers at the meeting. Thus Professor J. M. Greenberg (University of Leiden) noted that in fitting an amino acid with an excess in ultraviolet extinction at 2,800 Å, Hoyle and Wickramasinghe had overlooked that the spectrum observed from the International Ultraviolet Explorer (IUE) was "over-exposed" and flagged as such. Thus, Greenberg said, the feature is spurious. Hoyle's reply that the level of noise seemed to be consistent across the wavelength band was dismissed by other speakers.

A similar difficulty arose with the infrared feature at 3.4 micrometres. Dr H. Kroton (University of Sussex) emphasized that there is virtually an infinity of ways of producing this feature, since any compounds containing C-H bonds will exhibit absorption in this range. Thus, nobody should consider such a spectral match as unique — and in any case the data used by Hoyle and Wickramasinghe in their match with laboratory absorption measurements of *E. coli* were shifted in wavelength from the original publication. Hoyle and Wickramasinghe responded by saying they had used the data as supplied by the