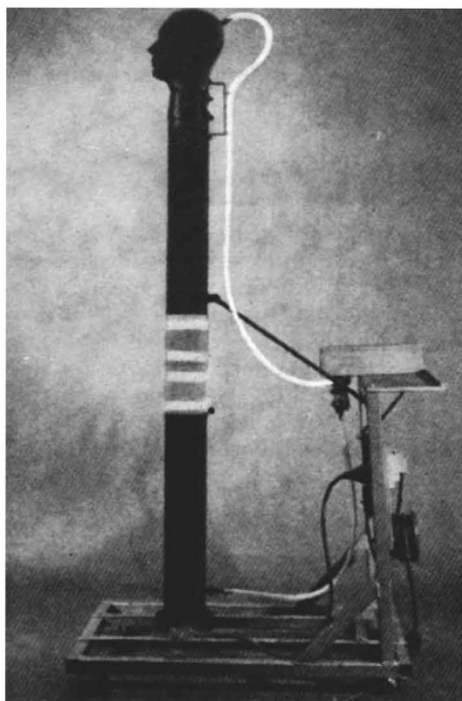


cooperation between difficult disciplines and with outside bodies (in this case the National Institute for Medical Research) and the discovery of common ground between the pure and applied approaches to the same piece of work. The basis of the research is the discovery in detail, by Schlieren photography, of how the layer of air next to the skin flows upwards along the body surface. There has been a study of bacteria transport—apparently the airflow from most of the body converges beneath the nose—and information has emerged which can be used to improve the design of protective clothing. The result is that medical benefits are emerging from a department chiefly concerned with aircraft.



Model for simulating convection currents around the human body.

Finding a suspension mechanism for fast trains has kept the department of automation engineering in close touch with the British Rail Technical Centre, chiefly because of the advanced passenger train now being developed (see *Nature*, 223, 663; 1969). In this case, the university is dealing with the dynamics and British Rail is looking after the engineering, and the result is a system with great potential export value.

Cooperation also works the other way round with other organizations providing facilities needed by staff of the university. Mr R. J. MacAnulla of the department of electrical and electronic engineering, for example, is working in a laboratory of the Electricity Council Research Centre at Capenhurst in an attempt to find physiological effects of weak magnetic fields by measuring reaction times when a field is applied across a subject's head.

The limitations of a working relationship with industry are nevertheless apparent from the almost exclusive concentration on physical and engineering sciences. Apart from medical and physiological applications such as those of Professor Cox and Mr MacAnulla, the research approaches no closer to

biology than ophthalmic optics, and the resulting intellectual environment might be thought unattractively narrow for the university's students. There is at least an active department of social studies and humanities, which in spite of its small size covers a broad field of interests from economics to philosophy, and provides courses for all undergraduates. Anyone who thought that the university's activities were totally utilitarian, however, would have been suitably re-educated at the open days by discovering a proudly exhibited working model which had reached the finals of a national competition for designing an Emmett-type automatic instant mashed potato machine.

LAW

Software Protection

from a Correspondent

A MOTLEY gathering including lawyers, scientists, patent agents and commercial executives attended a conference on the legal protection of computer programs at Brighton on November 13 and 14. They heard from Dr A. S. Douglas (London School of Economics) that the "unbundling" of software from hardware as a market commodity by IBM had increased the importance of software. After discussing such things as the nature of computer stores and the skills involved in producing programs, he left the impression that, as an academic, he was against the creation of patent monopolies in programs. In this he was joined, oddly enough, by Dr H. Aspden (IBM) who confirmed that IBM is against patenting of programs but strongly favours adequate copyright protection and, of course, an IBM proposal which ignores all existing laws and attempts to compromise between users, manufacturers and software houses.

The American view, expressed by Mr R. C. Lawlor (patent and copyright attorney, Los Angeles), strongly favours patenting whenever an invention is present, registration (in the United States) of copyright of at least part of the program and retention of the remainder, when possible, as a trade secret. Mr R. Lattes (SIA Ltd, and Metra International), discussing the European scene, seemed to agree with Dr Douglas. He was opposed to the protection of the ideas involved in a program on the basis that it amounted to obtaining monopolies for pure mathematics, but was not against some form of protection to cover the work put into writing a program. He did not consider the present law in France adequate but seemed to despair of communicating the problem to the lawyers. In general he seemed content with bilateral contracts but said that there should be a Society of Software Houses and some sort of boycotting policy, presumably against those who offended against a professional code.

The general impression of the conference was that, although there will inevitably be some patenting as the law stands, the future protection of software lies chiefly with copyright law. Mr E. P. Skone James (London), who summarized British literary copyright law, was firmly of the opinion that, subject to some amending legislation, it would give adequate protection to computer programs. He said that a literary work need not be humanly readable nor understandable to attract copyright and therefore, contrary to what is often thought, a program on magnetic tape could be an infringement of copyright.

Any enthusiasm or hope among the audience for instant legislation was properly damped by Mr Ernest Marples in his opening address and Lord Halsbury in his after dinner speech. They firmly stressed the need for careful appraisal, and a clear understanding of what is required and the pitfalls to be encountered before a bill becomes law.

MEDICINAL RESEARCH

Safety First

THE Beecham Group's growing interest in pharmaceuticals other than antibiotics has found a new home in a Medicinal Research Centre at Harlow, officially opened on November 11 by Professor Sir Charles Dodds. By his account, the group's research will in future include the development of psychiatric aids such as mood modifiers and memory stimulants, a search for more effective treatments of arthritis and rheumatism and further investigations in the anti-fertility field. Much emphasis at the opening, however, was laid on the precautions taken against possible toxic side effects which may appear from new drugs.

Harlow is taking over and expanding an aspect of the Beecham Group's activities that was always overshadowed at the Brockham Park laboratory in Surrey by the success of the penicillins. More than a third of the staff of 150 has moved from Brockham Park. The new centre is clearly a materialization of the hints about diversifying that Sir Ronald Edwards, chairman of the Beecham Group, revealed to the annual shareholders' meeting last July (see *Nature*, 223, 440; 1969).

Prospects for the centre's work in the microbiological aspects of arthritis are exciting, according to Dr H. R. J. Waddington, senior scientist. There is also much scope for new ideas in geriatrics, especially in dealing with the mental difficulties of aged patients: improving mood and reviving memory are two aspects that may become a widespread function of drugs in the near future, and the Beecham laboratories expect to be among the leaders in bringing out suitable new compounds.

All potentially marketable drugs will go through a number of safety tests which involve looking for effects on the constitution of the blood, the function of the cardiovascular and respiratory systems, the structure of tissues in treated organs, and all stages of the reproductive cycle, as well as investigations of drug metabolism. The possibility of foetal malformation



The Beecham Group's research centre at Harlow.

receives particular attention. The pharmaceuticals industry has obviously had to reconsider its screening procedures to prevent anything like the thalidomide tragedy happening again: one result is a change in the attitude of the scientists that might even give the impression to a casual visitor that the science of teratology began with thalidomide.

The organization of work at Harlow is flexible, with an interdisciplinary approach to the problems of chemistry, biology and medicine that have to be solved. Although it is up to the chemists actually to make the potential drugs, ideas are welcomed from all sources—even, it seems, from witch doctors, who occasionally come up with remedies that industry can usefully borrow. A notice on one laboratory door proclaims that "green coconut milk is taken in the Pacific Islands as a contraceptive", but it is not yet thought that the Palm endangers the future of the Pill.

CANCER

Research as a Charity

THE Marie Curie Memorial Foundation is expanding its research into cancer but is spending more than its income. This was the principal message to emerge from the foundation's annual general meeting in London on November 12, when the treasurer, Lord Amherst, announced a deficit of £71,766 for the twenty-first year of activities. The ignorance among the public of how often cancer can be prevented or successfully treated was emphasized at the meeting, and the chairman, Mr Ronald W. Raven, put in a plea for "the total abolition of tobacco".

The aims of the foundation, which calls itself "the only comprehensive cancer service in the world", include providing residential homes for cancer patients and help for patients staying at home, an educational and advisory service through a series of booklets, and a research department. It is an entirely voluntary organization, and donations this year were lower by £25,000 than in 1968. The foundation's assets amount to £884,389, however, and there are hopes of breaking even next year.

About twenty-five people are employed by the research department, which has just moved into newly acquired buildings at Limpsfield in Surrey. Present projects fall into four groups: the interaction between steroid hormones and nucleic acids, the metabolism of steroids within the cell, a study of tumour invasion and the anti-metabolic treatment of leukaemia. There is plenty of room at Limpsfield for further expansion, but this will depend on the availability of money. One possibility is an epidemiological unit to look at statistical problems in the incidence of cancer, and the extension of work on steroid chemistry. Applications for jobs in the research department greatly outnumber the opportunities.

The guest speaker at the meeting, Dr John Dunwoody, Parliamentary Under-Secretary of State (Health), stressed health education as one of the foundation's most valuable services and blamed the public for not responding to the government's anti-smoking and cervical screening campaigns. Dr Dunwoody did not, however, take up the bait offered by Mr Raven, who claimed that if people continued to smoke "it would be right and proper for a higher authority to take the action required".