British pharmaceuticals

Spin-off for research

THE Wellcome Foundation, the British pharmaceutical manufacturer, last week announced its best results ever. This development may have important consequences for British medical research because the company's sole shareholder, the charitable Wellcome Trust, already a substantial source of research funds, plans to sell 20 per cent of its major assets early in the new year. The higher this year's profits, the higher next year's share price is likely to be.

Wellcome's annual report for 1985 says that an increasing share of its business now derives from the United States, and that last year's profit of £121.7 million is largely accounted for by the then favourable exchange rate between the dollar and sterling. Even so, profits are up by 37 per cent over last year, and amount to 12 per cent of the turnover of £1,004 million. Thanks to agressive marketing, the US business accounted for 45 per cent of turnover and 73 per cent of the profit during 1985. The company spent £122 million on research and development last year.

For the year ahead, the pharmaceutical business hopes to do well with innovations prompted by concern over AIDS (acquired immune deficiency syndrome). Wellcome has to decide soon whether to seek to market its diagnostic tests for AIDS in the United States; the test is one of two selected by the Public Health Service in Britain for the routine screening of all donated blood, which began a few months ago.

Through its US subsidiary, Burroughs-Wellcome, the company is also hoping to make some headway with the antiviral compound azidothymidine, otherwise known as AZT, which is said to inhibit the multiplication of HTLV-III (human T-lymphotropic virus type III) in cell cultures and to have done well in toxicity tests in human subjects. Wellcome says that the drug development process has been shortened from three years to three months in the development of AZT so far, which is a measure of the eagerness of drug houses to put an anti-AIDS drug on the market. But Wellcome is exceedingly cautious about the potential of AZT, no doubt so as to avoid embarrassment of the kind following last month's announcement from Paris of a "successful" treatment of AIDS (see *Nature* **318**, 3; 1985).

The sale of 20 per cent of Wellcome's assets in January 1986 is expected to raise £300 million for the trust. The trust will then spend an extra £10 million per year on the support of permanent medical research groups in British universities (see *Nature* **317**, 662; 1985), which, added to its present expenditure of £20 million, will make it the single largest supporter of such research in the United Kingdom, spending more on medical research in the universities than does Britain's Medical Research Council.

The trust is still trying to decide how to attract the best projects. Last week it announced an award to Professor Neil Brooks and Dr James McCulloch at the University of Glasgow for the study of Alzheimer's disease. The research will be supported for at least 10 years and will cost about £1.3 million. And this week the trust is advertising a new award of up to £3 million to establish a research group using non-invasive methods to study the brain. Much of this money will be used to buy instruments such as nuclear magnetic resonance machines, normally too expensive for researchers in the United Kingdom. The trust expects to appoint the successful applicant in late 1986.

Maxine Clarke

Advanced ceramics

Rush to metal/oxide composites

Boston

A NOVEL method of making ceramic metal composites, known as the lanxide process, was a major attraction at this year's autumn meeting of the Materials Research Society in Boston. The new process, rumoured for some months, was described in public for the first time by Dr Mike Newkirk of the Lanxide Corporation of Newark, Delaware. It promises new tough ceramic composites at significantly lower cost than existing methods, which tend to be expensive and produce a brittle end result.

Lanxides are formed by reaction between a molten metal and a vapour-phase oxidant, for which air will suffice. Typically, the metal has to be doped with a least two dopants — magnesium and silicon work for aluminium — and the temperature of the melt brought to within set limits (1,250°C in this example). The lanxide, in this case a coherent composite of aluminium and interconnected aluminium oxide, forms at the metal surface.

The mechanism of the reaction remains obscure. The material grows from the metal/oxidant interface towards the oxidant, and metal is transported through the growing lanxide by a process that appears not to be reliant on diffusion. The properties of the material, which can be grown in slabs an inch thick can be adjusted by altering the temperature of the melt and by depleting (or not) the reservoir of molten metal.

The microstructure, which reveals a millimetre-scale columnar grain, changes over the cross-section of the lanxide. By appropriate choice of conditions, tensile strength or toughness of an aluminium/aluminium oxide lanxide can be increased significantly above that of sintered alumina. No details of other lanxide materials were given last week, but Newkirk said that "hundreds" of inventions arising from the new technology are being patented.

Military and proprietary interest in the new materials is intense. Obvious applications include rocket and jet engines, armour plating and the Strategic Defense Initiative, where there will certainly be a demand for strong but light materials. According to Professor Rustum Roy of Pennsylvania State University, the importance of the process was brought to the attention of President Reagan soon after it became apparent, and much of the development has been funded by the Defense Advanced Research Projects Agency under conditions of strict secrecy, with arms traffic regulations being invoked to restrict access of technical details to foreigners. Earlier this year, Lanxide Corporation, co-founded by Newkirk two years ago to commercialize the process, received an $18 million cash injection from Alcan Aluminum Limited in exchange for a 42 per cent holding. Joint ventures between Lanxide and other companies are now also being negotiated.

Tim Beardsley

Bad day for Yonas

THINGS did not go too well last week for Dr Gerold Yonas, chief scientist of the Strategic Defense Initiative (SDI) Organization, when he addressed the Materials Research Society on "Materials for SDI".

Reliability of complex systems has surfaced as a potentially major problem for SDI, and half of the organization's budget is devoted to battle management systems and communications and control. But the frailty of even the most carefully staged events was emphasized when Yonas got up to speak, only to find himself completely inaudible to the audience of close on a thousand. Conference aides fussed and fumbled for a couple of minutes before it was discovered that someone had forgotten to switch on Yonas's microphone. The irony was lost on nobody.

Yonas proceeded to gallop through his usual one-hour presentation on SDI, spiced with some new references to the need for strong and light materials in, for example, space-based reflectors for lasers, and for materials with low coefficients of expansion in infrared lasers. The talk would have been better suited to an audience of high-school students or perhaps congressmen than to a technically-sophisticated group of researchers, and the applause was less than enthusiastic. After some generally hostile questions, Yonas left, perhaps wishing he had not bothered to come.

Tim Beardsley