news
from HARWELL

HARWELL BRINGS NEW HOPE TO HEART SUFFERERS

A nuclear-powered pacemaker, that could bring a new lease of life to thousands of people suffering from certain types of heart trouble, is to be made at the Harwell Atomic Energy Research Establishment.

The pacemaker, implanted in a patient's chest, will provide the rhythmic stimulus that his defective heart needs.

Conventional pacemakers with chemical batteries have to be replaced surgically about every three years. Prolonged trials indicate that the implanted lifetime of the Harwell units could reach 10 or even 20 years.

The Department of Health and Social Security has placed the first production order with British Nuclear Fuels Limited for 100 of the new nuclear batteries and an order for another 200 batteries is following. The work has been sub-contracted to Harwell, where a team has been developing the technology for six years. The team is led by Dr. Alan Penn of the Electronics and Applied Physics Division.

Under the present contract Harwell will prepare the heat-producing nuclear sources, each containing less than a fifth of a gram of plutonium oxide, and assemble them, with their miniature thermocouples, in strong metal housings to form the nuclear batteries that power the pacemakers. At the request of DHSS, Harwell has also undertaken for an interim period to assemble 100 pacemakers in which solid-state DC/DC converters and electronic pulse generators (the former also made at Harwell) will be connected to the batteries. The assembly is encapsulated in an epoxy resin known to have lasting compatibility with living tissue.

About 100 pre-production models of the nuclear battery have already been made at Harwell and fitted into pacemakers of similar design by the Implant Division of Devices Limited of Welwyn Garden City. The pacemakers have been subjected to long-term controlled trials at recognised cardiological centres under DHSS supervision. First, they were tested in animals and then, during the last five years, in human patients - the earliest of whom is still using hers.

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Research Laboratory of the UK Atomic Energy Authority.

Internationally agreed safety standards require stringent tests on the batteries. These ensure that there is no radiation hazard and that they will withstand the most severe accident - fire, impact or even cremation - that they are ever likely to encounter.

The isotope Plutonium 238 has been chosen for the heat source because its power output falls by only one per cent per year, and its radiation, mainly alpha particles, requires the minimum of shielding for implantation. This isotope is specially prepared for the pacemaker batteries and is markedly different from the very long-lived Plutonium isotopes associated with nuclear weapons and nuclear fuel.

These pacemakers will only be available for selected clinical trials. Confirmation from the trials of the safety and efficiency of the battery is confidently expected to lead to exploitation of the Harwell battery by BNFL through pacemaker manufacturers throughout the world.

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PHOTOGRAPH

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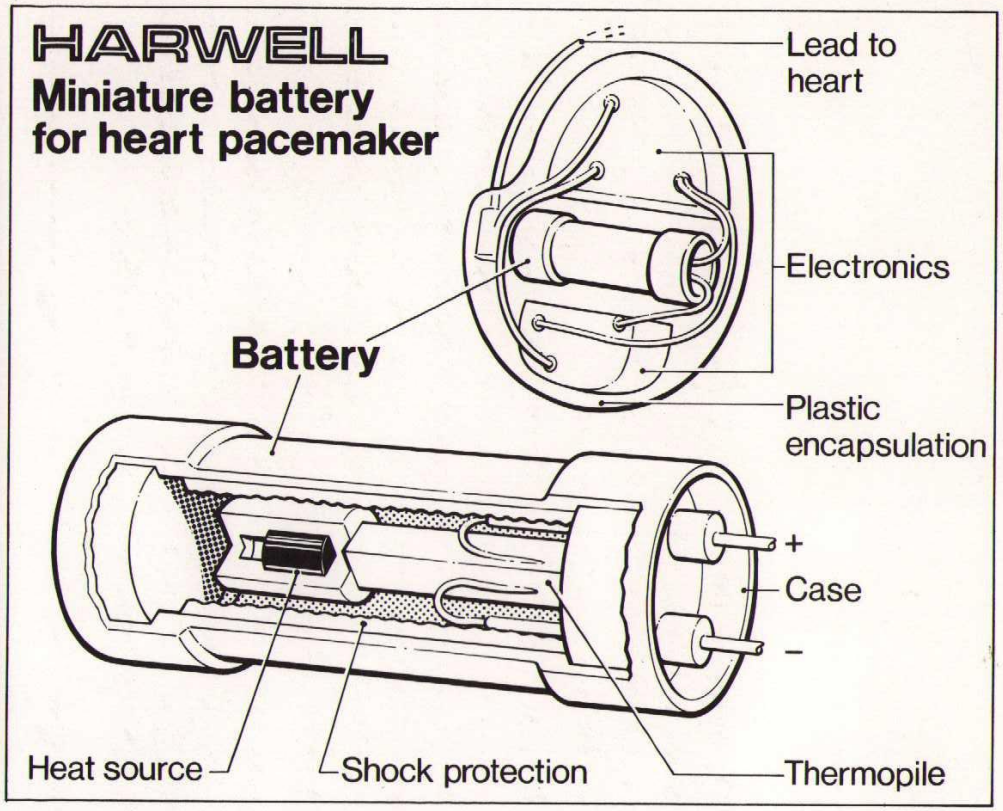

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