first atomic pacemaker in human being

Since April this year
the heart of a 58-year old Frenchwoman
has been beating regularly with the help of impulses
from an atomic-powered "pacemaker".
This is the first time that such a device has
been used in a human being,
though successful tests have been made with animals
in UK and USA.

The device, described as being of about the length of a fingernail and the thickness of a cigarette, contains 150 milligrams of plutonium-238. The heat of fission is converted directly to electricity, providing power for associated circuitry which stimulates the heart muscle at regular intervals so that normal blood circulation may be maintained, thus correcting a condition due to a particular malfunctioning of nerves.

Electronic pacemakers have been used by surgeons for years; thousands of people are now alive who would be dead but for their support. But these devices have suffered from the drawback that their batteries have a life of no more than perhaps 30 months, after which the battery must be replaced. The atomic-powered pacemaker has been designed to last ten years.

Similar devices have been developed in several countries, and a number have been used in experiments with animals. The one used in this operation was developed by Dr. Paul Laurens, of Broussais Hospital in Paris, who with Dr. Armand H. Pivnica attached the pacemaker to the inside of the woman's chest cavity just above the diaphragm. Wires leading from it were embedded in the woman's heart muscle. An important feature is that the device lies quiescent for as long as the natural heartbeat is adequate to keep up normal blood flow. When the heart-rate falters the pacemaker takes over automatically.

The two doctors appear to have overcome a major safety problem, in that more than ninety per cent of the radiation from the plutonium source is said to be absorbed within the protective sheath of the capsule, made of tantalum and platinum. The capsule has been designed to withstand temperatures of up to 3000°C, shattering and corrosion. The amount of radiation actually released in a year is said to be equivalent to no more than the woman would receive from a single chest X-ray.

Science writers in newspapers and magazines have speculated that this operation — which appears to have been successful — may foreshadow the day when nuclear energy will be used for competely artificial hearts, on which design studies are already well advanced, or other devices to assist bodily functions.

Attention was drawn to the use of miniature power sources inside the body to encourage the working of defective organs or to assist people born with deformities at an Agency study group meeting in July 1966.

On the occasion of the hundredth anniversary of the birth of Lenin — Vladimir Ilyich Oulianov — the USSR Resident Representative to the International Atomic Energy Agency, Ambassador G. P. Arkadiev, paid a special visit to the Director General, Dr. Sigvard Eklund. He presented a complete edition in English of Lenin's works for the Agency library. The centenary was also marked by a lecture to Agency staff given by Academician D. I. Blokhintsev, who outlined developments in scientific work in the USSR resulting from Lenin's thoughts and inspiration.