heavily exposed to it for more than 20 years.[3] Some long-term studies on pure-line mice have suggested that an increased incidence of tumours may result,[4] but there has been no evidence of this in man. The risk of death from malaria and other diseases must be weighed against that.

The search goes on for alternatives to D.D.T. that are biologically degraded.[5] It is possible that methoxychlor (2,2-bis-(p methoxyphenyl)1,1,1,-trichloroethane), known for many years and rapidly degradable, is suitable for some purposes. As far as public health is concerned the objection to existing or likely alternatives to D.D.T. is their expense. This factor alone, for a substance of which some 50,000 tons is needed annually, would cripple the control of disease in most countries. Moreover, none of the alternatives to D.D.T. has its enviable record of safety in use, though some, but not all, may one day attain it.

As the one profession qualified to judge the value of D.D.T. to man doctors must use their influence to ensure that it continues to be available for use against the vectors of disease. It has been incontrovertibly shown to prevent human illness on a scale achieved hitherto by no other public health measure entailing the use of a chemical.

Plutonium for Pacemakers

Implantable cardiac pacemakers may soon be driven by electrical energy derived from plutonium, a man-made metal which until now has been associated only with atomic bombs and nuclear reactors. The batteries of conventional design used in pacemakers have an effective life of between one and two years. Since many patients can be expected to survive for considerably longer after the implantation of a pacemaker, and since the batteries make a major contribution to the size and weight of the device, a better source of energy would be welcomed. The power requirement is very small. In a well-designed pacemaker an output (averaged over the heart cycle) of 50 microwatts is more than enough,[1] and the complete elimination of batteries has been seriously considered. But research in this direction[2] has not yet produced sources of biological energy suitable for prolonged use in man.

A fresh approach now being developed[3] at the Atomic Energy Research Establishment, Harwell, is with plutonium-238. This isotope, not to be confused with its neighbour plutonium-239 (used in nuclear weapons and power stations), emits alpha-particles and has a half-life of about 90 years. In principle, the energy of the escaping alpha-particles can be converted to heat and, by the use of a thermoelectric device, into electrical energy. A prototype source of this kind has been driving a pacemaker in laboratory tests since June 1968. Further studies designed to reduce the plutonium content, both to save cost and to limit the radiation dose, are now in progress. It is expected that the final version of the plutonium battery will be of cylindrical shape, 4·5 cm. long and 1·5 cm. in diameter, with a weight of no more than 140 g. and a useful life of at least ten years. The plutonium power source, with the small electronic unit needed to couple it to a pacemaker of standard design, will be sealed into a container about $5 \times 3 \times 2$ cm. in size.

The material used in the nuclear battery contains small amounts of isotopes other than plutonium-238, and they add to the radiation dose. The safety of the plutonium is also a matter for concern. Tests made by the Atomic Energy Authority show that the integrity of the plutonium battery will survive heating to 850° C. for 30 minutes—for example, in cremation—or crushing by a 2-ton (2,000-kg.) load—for example, in a road accident. Though further thought may have to be given to both the hazards and the cost of plutonium, technical advances in design and construction are to be welcomed, for the number of pacemakers implanted in Britain is now well over 1,000 per year and is likely to increase rapidly.

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The Desmoid Tumour

A rare though well-recognized fibromatous lesion arising from the musculo-aponeurotic structures of the body bears the name desmoid tumour. It is derived from the Greek *desmos*, meaning a band or tendon, and alludes to the tendon-like consistency of the tumour.[1] Found most often in the anterior abdominal wall, the tumour arises especially from the rectus sheath, and the patients are usually young or middle-aged parous women.[2-4] The remainder of abdominal desmoids often arise at the sites of operation scars or other injuries.

The tumour is a well-differentiated fibroma consisting of mature fibrous tissue with sparse, regularly disposed fibroblasts. It is characteristically diffuse and non-encapsulated, tending to infiltrate surrounding muscles, the fibres of which are incorporated into the growth, where they undergo atrophy. It is this infiltrative tendency that accounts for the notorious tendency to recurrence after apparently adequate resections. But the lesion is not malignant and does not metastasize. It must be distinguished from a fibrosarcoma, which is usually more circumscribed and differs histologically in its hypercellularity and cellular anaplasia.

Desmoid tumours may also arise from extra-abdominal sites.[1 5 6] They have been described in the region of the shoulder, which is said to be a common area of predilection,[5] and in the muscular tissue of the legs, thighs, chest, and back of the neck. A desmoid arising from the masseteric aponeurosis has simulated a parotid tumour.[6] Recently T. K. Das Gupta and his colleagues have reviewed 72 cases of extra-abdominal desmoid tumours treated at the Memorial and James Ewing Hospitals, New York.[7] Forty-five occurred in females and 27 in males ; the age of onset varied from 8 months to 79 years, but was usually between 20 and 49 years. In only two cases, both in young children, was there a history of local trauma. The most frequent sites were the limbs and the trunk, but some tumours arose in the head and neck, and a

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