Artificial Cardiac Pacemakers

SIR.—Dr. D. Vérel (4 May, p. 301) raises several interesting points concerning the choice of a system for long-term cardiac pacing, but I do not think it is correct for comparisons to be made between a nation-wide survey of implanted pacemakers and the results obtained at one special centre using the induction method. It is a simple matter to select another centre using implantable pacemakers with results fully comparable to those obtained by Dr. Vérel. The paper by Mr. W. Forbes and others (6 April, p. 13) provides such an example.

The advantages in keeping the pulse generator outside the body quoted by Dr. Vérel are accompanied by disadvantages he omits to mention. Among these are the risk of displacement of the external coil and the possibility that the patient may turn off his pacemaker either deliberately or by mistake. The controls are available equally to the uninformed patients as to the informed. The prevention of competition between sinus and

paced rhythms by cessation of pacing is dangerous, since heart block frequently returns, and deaths have been reported when this policy was followed. The use of implantable demand pacemakers deals very satisfactorily with the problem of patients who return to sinus rhythm, but no demand version of the induction system is available as yet.

Dr. Vérel has misquoted my survey (6 April, p. 11) as showing that 57% of the implanted pacemakers had failed, whereas the true figure should be 41% (116 failures in 278 implanted pacemakers). Since this includes battery exhaustion it could be claimed that the Lucas pacemaker fails regularly every month, and in some cases every week.

These comments are in no way intended as a criticism of the excellent clinical results obtained with induction pacemakers, but to suggest that comparison of the survey for implantable pacemakers can only be made with a similar nation-wide survey of the induction system.—I am, etc.,

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Design for Ambulances

SIR.—Recent correspondence and articles in the *B.M.J.*¹⁻³ indicate increasing interest in ambulance design. The Ministry of Health Report⁴ on (Equipment and Vehicles) Ambulance Training and Equipment Part 2, 1967, cited the following more important design criteria for ambulances:

(1) Front wheel drive; (2) independent suspension; (3) forward control; (4) low floor level; (5) adequate interior capacity; (6) smooth ride; (7) attention to heat retention; and (8) ease of loading.

All my designs from 1959⁵⁻⁸ onwards have included these basic points and many others not yet arrived at by official reports—for example, ground loading capability and specific heat-retaining design. Ambulances should be built as simply as possible consistent with achieving prevention of death by the ambulance ride and prevention of the aggravation of the injury and illness. Ambulance

design to achieve such ends will, however, be more complex than the simplest ambulance (the horse-drawn ambulance), and certainly more complex than the relatively primitive automotive designs currently in use for ambulance work which do not achieve the required objectives. Though anticipating all major design criteria set out by the Ministry Working Party (in 1967) even in its 1959 form, no official support has ever been received for my design.

The annual home market for such a vehicle is only in hundreds as an ambulance, but since such a vehicle, particularly with low loading capability, has hosts of other uses the ambulance requirement alone is not the gauge of production requirement. The export potential of such an ambulance is very great and is never mentioned in the official reports. Surely Government committees should be cognizant with Britain's export needs.

The cost of such a vehicle would depend on the production figure. A prototype in 1963 would have cost £15,000. In 1967 the Ministry Working Party states that £60,000 is now needed to develop a vehicle. By their own criteria their projected vehicle would be practically identical with mine. In 1963 the selling price of such a vehicle would have been £3,000 to £3,500. As existing ambulance vehicles achieve practically none of the desirable requirements for an ambulance, one cannot compare the cost of a vehicle with restricted capability with one which has all the required life-saving design features. There is no existing price yardstick for an ambulance. Comparison of a real ambulance with the price of a converted commercial vehicle is not an admissible comparison.

The Ministry of Health Working Party's Report of 1967 describes my vehicle as "a vehicle capable of lowering its body to the ground," but no other descriptive data are given. The Report states that this vehicle, which has in fact front-wheel drive, independent suspension, etc., and all of the significant design features the official committee cite, is not a basis for development. They then go on to cite their own identical main design criteria but give no references or sources to the four published papers describing my designs from 1959 onwards which were available to them and which antedate their conclusions by many years.—I am, etc.,

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Oral Contraceptives and Thromboembolic Disease

SIR.—I believe that in one respect Dr. M. P. Vessey and Dr. R. Doll have departed from the generally high level of objective analysis displayed in their recent article (27 April, p. 199). They note that "42% of the women who developed thromboembolic disease . . . had been using oral contraceptives for less than six months," yet in their discussion they remark that "In particular there is no suggestion . . . in this study . . . that venous thromboembolism tends to occur shortly after beginning the use of oral contraceptives." Surely anything less than six months is a fairly short time in the context of this form of drug therapy, and 42% is a not inconsiderable proportion?

I have no direct clinical concern with the prescribing of oral contraceptives, although I do have a peripheral interest in certain aspects of their pharmacology. I have been struck by the frequency with which the cases of thromboembolic disease, about which I hear (clinical impression and hearsay evidence only, I admit, and thus highly suspect), have occurred within a few months of the patients having started a course of oral contraceptives. The change in tissue properties or constitution evoked by the pill which increases the

Overall concept diagram showing trolley in position.