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Correspondence

Letters to the Editor should not exceed 500 words.

Choice of Injection Sites

SIR,—The case report by Drs. P. W. Harvey and G. C. Purnell (23 March, p. 744) and your editorial comment thereon (23 March, p. 721) should finally convince everyone that the buttock is no place in which to inject adrenaline. But does the argument end there? Given that this is a relatively dirty area in the bacteriological sense, why inject anything there at all? Is my impression correct that over the years, in consequence of a change in nursing rather than strictly medical practice, the buttock has displaced the arm as the regular site for injecting medicaments of almost any kind? These include small volumes of drug solutions which cause no subsequent pain or reaction and can perfectly well be accommodated almost anywhere in the body. Is there in fact any reason for resorting to the buttock except as a capacious alternative site when other muscle areas are becoming sore from repeated injections during a long course of penicillin?

Another question arising is: Why are so many injections made into muscle? It is more vascular than connective tissue, and absorption from it is thus more rapid, which is an advantage when giving therapeutic serum. But if a speedy effect is essential, why not give this intravenously? What else is there to which this advantage applies? Not "soluble" penicillin; this is absorbed and excreted all too rapidly. The slower absorption from connective tissue could be a positive advantage. Not adrenaline, at least in Drs. Harvey and Purnell's patient: the preparation used was formulated to ensure slow absorption (and had it been injected subcutaneously he might well have escaped). Various drugs apt to cause painful local reactions, including some antibiotics (polymyxin, cephalothin, and parenteral forms of tetracyclines) are supposed to be better tolerated by muscle than by connective tissue. Is this always true?

Vaccines and toxoids are often injected quite deeply, whether with the express intention of depositing them in muscle or not. It is difficult and perhaps for special reasons undesirable to avoid intramuscular injection in infants, but is it not better avoided in older children and adults, in whom the local reaction is usually more severe? Is the subsequent dispersion of the injected material by muscular contractions considered to be an advantage? It presumably causes more pain and perhaps more general reaction. The area in which such materials are deposited has to be invaded by macrophages, and this inflammatory reaction goes on eventually to fibrosis. Why inflict this permanent injury on a muscle? Or is the reaction less effective if quietly and harmlessly localized in connective tissue?

I have asked questions rather than venturing to dogmatize because these matters are only on the fringe of areas in which I can claim any special knowledge. If I may be allowed a final question: Assuming that there are any doubts or disagreements here, should not a few well-informed people get together and try to decide whereabouts in the body and into what tissue different kinds of injection should be made?—I am, etc.,

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Long-term Administration of the Pill

SIR,—Contraception for the nulliparous teenager, whether married or not, is a matter for the advising doctor and the individual patient. However, I would like to draw attention to the possible dangers of prescribing "the pill" for long periods to these patients.

It is generally agreed that women reach the peak of their fertility at the age of 25, after which there is a steady but inevitable reduction of fertility. I have been able to carry out a number of biopsies of the ovaries by laparoscopic techniques on patients who have been on one or other of "the pills" for three years or more. Some of these patients have developed a secondary amenorrhoea of at least 12 months' duration. Changes which take place in the ovaries are those of marked thickening of the capsule, with distortion of follicles, reduction of the primordial follicles, and hyalinization of some of the ovarian arterioles. In several of the patients there has been considerable reduction in the ovarian volume to less than half the normal size, and the primordial follicles have been found to be scanty in number.

Several reports have now drawn attention to a possible relation between infertility and the use of oral contraceptives.[1-3] There is a growing volume of information which suggests that the secondary amenorrhoea is causally related to the oral contraceptive. Many but not all of the patients with secondary amenorrhoea can be induced to ovulate again on clomiphene therapy. In the light of our present knowledge it appears to me to be dangerous to give patients who have not proved their fertility oral contraceptive pills for more than a very short period of time, such as might be given for the treatment of menstrual disturbances and dysmenorrhoea. The long-term use of these pills carries with it a definite danger of producing irreversible sterility.

It is hoped that doctors will exercise caution in prescribing "the pill" to the young population, and that any future new contraceptive therapy will be thoroughly investigated for its short- and long-term effects. "The pill" is attractive to the public and to certain sections of the medical profession, because it is simple to administer. This very attraction appears to dull the