their use in the treatment and control of infection—and for some in enhancing animal growth—and while not advocating the indiscriminate use of antibiotics, I think a proper sense of proportion should be maintained when considering this problem in human medicine and any relationship there may be to animal biology.—I am, etc.,

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Healing of Duodenal Ulcer

SIR,—Despite the abundance of literature on duodenal ulcer very little information is available on the topographical progress of the ulcer after medical and surgical treatment. With the introduction of fiberoptic endoscopes the progress of the ulcer can be easily followed and recorded, particularly after highly selective vagotomy because of the undisturbed anatomy.

Since August 1973 in a consecutive series of 15 patients with duodenal ulcer I have recorded the endoscopic appearances before highly selective vagotomy and at monthly intervals thereafter. At one month after surgery there was no significant change in the ulcer, though previously noticed periulcerous congestion and oedema had disappeared. At two months three of the ulcers had completely healed and there was evidence of epithelization in the others. At three months only two of the ulcers remained unhealed: one of these had epithelized by the next examination but the other persisted at five months. All patients remained symptomless during this period.

From this observation it transpires that, though symptomatic relief may be obtained immediately after surgery, it may take many months before the ulcer actually heals. Similar follow-up is being carried out during medical management because from my experience it would seem that recommended courses of six weeks' treatment are too short for complete healing of duodenal ulcers.—I am, etc.,

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Attitudes to Abortion

SIR,—Miss Madeleine Simms, having bracketed by implication Professors H. C. McLaren and J. S. Scott with the Nazis (1 June, p. 501), proceeds to make a series of statements which have little relation to the truth.

Let us consider the facts: Among the first Acts the Nazis passed was one permitting mass sterilization of the congenitally abnormal. This was subsequently expanded by secret decrees which permitted the abortion, sterilization, and liquidation of the Jews and the Reich's other "enemies." It is for this reason that abortion methods were perfected in concentration camps. It is true that the Nazis were opposed to abortion for "wanted Aryans" (they, like Miss Simms, were interested in eugenics), but any society, including our own, is judged by how it treats its "unwanted" people. Careful thought

might determine whose beliefs are closest to the Nazis' we all affect to despise.—I am, etc.,

MARGARET S. WHITE

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Laparoscopic Sterilization

SIR,—The letters of Dr. K. R. Greene and others (6 April, p. 54) and Mr. F. E. Loeffler (25 May, p. 444) stimulate me to write again on the subject of sterilization by laparoscopic techniques. The performance of the Pomeroy sterilization under laparoscopic control was described by me in 1972 but I had reservations about the method. I regard it as a retrograde rather than a forward step as it carries with it the disadvantages of the Pomeroy ligation with its failure rate. From the point of view of long-term success I also described what I think is a much better procedure—namely, that of laparoscopic fimbriectomy. The extremity of the ampulla and the fimbria is much more mobile than the midportion of the oviduct and it can be lifted out of the abdomen in suitably selected thin patients without undue risk of causing haemorrhage from a mesenteric tear, to which Mr. Loeffler rightly calls attention in his procedure. Two separate incisions about 1 to 1½ cm in length are required each side of the midline in the pubic hair line, avoiding the epigastric vessels by laparoscopic transillumination using the angled telescope.

Fimbriectomy is much more likely to lead to permanent successful sterilization than the Pomeroy technique. Incidentally, accidental damage to a branch of the inferior epigastric vessels does not need laparotomy as a rule. Haemostasis can be secured by passing a large curved needle through to the peritoneum under laparoscopic vision. A figure of eight made in this manner will be seen to control the haemorrhage successfully without the need for opening up the incision. As regards the problem of reversibility, I hope to report soon on a large series of patients fitted with intratubal devices which are held in position by a single tantalum clip.¹ The principle of the procedure is *not* to achieve occlusion of the oviduct, so that function can return without any major operative procedure. In 1973 Frangenheim² and Semm³ each reported two methods of performing laparoscopic tubal ligation which do not require more than one ancillary incision for introducing the necessary special ligation instruments. Frangenheim places a suture around a loop of each tubal isthmus and Semm passes his ligature right round the tube, which is grasped with a ligating forceps. In the future, diathermy coagulation of the tubes will be safely achieved by the use of a disposable forceps which utilizes a direct current of 30 volts rather than high frequency diathermy. It may be that we shall use this method for permanent sterilization and intratubal devices for reversible sterilization. Obviously, careful selection of patients will be needed.

Incidentally, not only can Pomeroy ligations and fimbriectomies be performed under laparoscopic control but also appendicectomies. The appendix is lifted out of the abdomen through a small incision by means of a grasping forceps, and then removed in the usual way. Security of the ligatures can

be readily assessed by dropping the caecum back into the abdomen leaving the ligatures long until inspection by laparoscopy is complete. There are cases suitable for this postage-stamp type of surgery, which one did not undertake formerly.—I am, etc.,

PATRICK STEPTOE

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- 1 Steptoe, P. C., *Proceedings. American Society of Gynecological Laparoscopists*, 1973. In press.
- 2 Frangenheim, H., *Proceedings. American Society of Gynecological Laparoscopists*, 1973. In press.
- 3 Semm, K., *Proceedings. American Society of Gynecological Laparoscopists*, 1973. In press.

Abdominal Decompression in Pregnancy

SIR,—While agreeing with many of the points made by Professor P. Curzen (1 June, p. 499) about your leading article (4 May, p. 238) the possibility you hinted at that because the trial of Varma and Curzen¹ was not a blind one the observed difference in the results obtained in the two groups of patients may have been due to observer bias still seems to me a plausible interpretation of their findings. There is, however, another much less nihilistic interpretation which I thought was dismissed much too summarily in the original paper.

I refer to the possibility that the decompressed patients may have had better results with regard to their babies because they received less antenatal bed rest. Though the mean duration of bed rest was only 1.5 days less in the decompressed patients, this difference was found to be statistically significant and its possible effect upon fetal well-being may have been enhanced by a much larger difference in the strictness with which the antenatal bed rest was enforced in the two groups of patients. As I know from my own work on decompression,² getting into the suit, working the levers, and even breathing in it are no mean feats. This of itself will have been enough to ensure that the decompressed patients got more daily exercise than the control patients who were left in bed. It is also possible that the treated patients were walked to and from the suit and that the ward sisters, seeing them receiving what amounted to exercise on doctor's orders, will have allowed them considerably more freedom about the wards.

In their original paper Dr. Varma and Professor Curzen quote the review of Green *et al.*³ as providing support for their supposition that the greater amount of rest received by the control group of patients will, if anything, have improved the well-being of their fetuses and so have made the beneficial effects of decompression *per se* even more striking. The works reviewed by Greene *et al.*, however, show only that uterine blood flow, not even fetal well-being, can be increased by rest, or rest after exercise, over periods of time which are infinitesimal compared with the weeks and even months of bed rest that some of Dr. Varma and Professor Curzen's patients received. Assuming that the apparent beneficial effect of bed rest will hold for such long periods of time is like assuming that the fastest man over the first five of the 10,000 metres is necessarily going to be the leader 25 laps later.

I would respectfully submit that there is evidence⁴ suggesting that prolonged ante-

naal bed rest may actually have a deleterious effect upon fetal growth and well-being and that until this basic problem is settled it is not possible to say whether the better results obtained by Dr. Varma and Professor Curzen in their decompressed patients are more likely to have been effected by the decompression itself or by the lesser amount of enforced bed rest to which they were subjected.—I am, etc.,

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- 1 Varma, T. R., and Curzen, P., *Journal of Obstetrics and Gynaecology of the British Commonwealth*, 1973, 80, 1086.
- 2 Mathews, D. D., and Loeffler, F. E., *Journal of Obstetrics and Gynaecology of the British Commonwealth*, 1968, 75, 268.
- 3 Greene, J. W., Duhring, J. L., and Smith, K., *American Journal of Obstetrics and Gynecology*, 1965, 92, 1030.
- 4 Mathews, D. D., Patel, I. R., and Sengupta, S. N., *Journal of Obstetrics and Gynaecology of the British Commonwealth*, 1971, 78, 610.

Effects of Exertion on Hormone Secretion

SIR,—Physical activity or exercise is a stimulus to the secretion of many hormones, including cortisol¹ and testosterone.^{2,3} However, the response may depend on the physical fitness of the individual and the degree (or type) of exercise.

In order to study the response during very strenuous exercise we determined plasma testosterone by radioimmunoassay in 13 Finnish amateur sportsmen aged 30–40 years who were participants in the second non-competitive marathon run in Athens on 20 October 1973. Some determinations were also made on a Greek participant (no. 14), a former marathon prizewinner. All were in good physical condition before the event and had trained regularly, running as part of a programme to increase physical fitness. Eleven of the participants (nos. 1–11) ran the marathon (42.2 km) in 210–285 min. One of the participants (no. 12) took only 180 min, and because his physical condition after the run was exceptionally good he is considered separately. Participant no. 13 collapsed after having run 15 km in 66 min, and he also is considered separately. It must be emphasized that the temperature was very high, about 30°C in the shade. Water was available ad libitum every 5 km and at the finish, before blood sampling. The samples were obtained within 30 min of completion of the run. Control samples were taken at 1200 and 1600 hr (approximate times of start and finish of the marathon) some days before or after the run.

The results of the plasma cortisol determinations ($\mu\text{mol/l.}$) are shown in table I.

The results of the plasma testosterone determinations (nmol/l.) are shown in table II.

As was to be expected, the mean plasma cortisol value increased highly significantly ($P < 0.001$); however, in the participant who collapsed the value did not increase. Surprisingly, the plasma testosterone values fell

TABLE II—Results of the plasma testosterone determinations (nmol/l.)

Participant No.	Control Samples		After Marathon
	1200 hr	1600 hr	
1–11	21.6 $\pm$ 11.5 (S.D.)	23.4 $\pm$ 11.8 (S.D.)	14.1 $\pm$ 9.4 (S.D.)
12	27.4	33.2	36.0
13	13.9	11.0	3.0
14	—	19.9	11.4

significantly ($P < 0.001$) in all participants with the exception that participant no. 12, who was better trained than the others, had a slightly increased value. The participant who collapsed had a very low value—in fact within the normal female range. Thus these results show that strenuous physical exercise has different effects on hormone secretion in different individuals. Because some of the results cannot be explained at present the investigation will be continued during the next marathon run in Athens.—We are, etc.,

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Finland

- 1 Sutton, J., et al., *Medical Journal of Australia*, 1972, 2, 127.
- 2 Sutton, J. R., et al., *British Medical Journal*, 1973, 1, 520.
- 3 Lipsett, M. B., et al., *Recent Progress in Hormone Research*, 1966, 22, 245.

Amitriptyline and Imipramine Poisoning in Children

SIR,—Drs. H. W. Asbach and H. W. Schüler (18 May, p. 386) report the use in two children of haemodialysis in imipramine poisoning. The conclusion is that compared with conservative management “the duration of coma seems to be favourably shortened.” No information is given as to the amount of imipramine recovered by dialysis, but the authors cite Harthorne *et al.*¹ as reporting “successful haemodialysis treatment after imipramine poisoning.” Harthorne *et al.* in the reference cited stated in fact that “dialysis did not remove significant amounts of imipramine” and that out of a total of 5,375 mg of imipramine ingested only 30 mg was recovered after 5½ hours of dialysis.

It is indeed unfortunate that you should have published Drs. Asbach and Schüler's letter which contained no facts to substantiate their claim that “the amount of imipramine recovered in the dialysate is not so small as has been supposed” (apart from a reference to unpublished work *in vitro*) and cited a reference which clearly proved the futility of using haemodialysis to remove imipramine in this form of poisoning.

It is to be hoped that haemodialysis or any other method attempting to increase elimination will continue to play no part in the management of patients poisoned by

tricyclic drugs until it can be demonstrated that worthwhile amounts of the drugs are indeed removed by the method advocated.—I am, etc.,

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- 1 Harthorne, J. W., Marcus, A. M., and Kaye, M., *New England Journal of Medicine*, 1963, 268, 33.

Sleeping Sickness

SIR,—Your leading article on this subject (4 May, p. 236) excellently draws attention to some new techniques becoming available for the “subspecific” differentiation of trypanosomes but calls for two comments, one major and one minor.

You mention the use of human volunteers for a “final test of infectivity to man” of strains already categorized by the blood incubation infectivity test (B.I.I.T.). It is not possible in a letter to discuss the serious doubts which attach to past experimentation with human subjects in Africa for this purpose, but I must record that to my mind it is ethically indefensible to inoculate B.I.I.T.-positive strains—that is, those indicated as infective to man—into humans to confirm that indication. This concordance between test result and infectivity to man may be studied by trial in the B.I.I.T. of strains isolated from naturally infected subjects. Only the opposite concordance, that of negativity in the B.I.I.T. with non-infectivity for man, calls for experimentation with humans; and the subjects used for such experimentation should be people who have never visited Africa and who may therefore be assumed not to have any acquired immunity to infection with *Trypanosoma brucei* subspecies.

The B.I.I.T. is dependent on the “neutralization” by human serum of the infectivity of *T. brucei brucei* (non-man-infecting) to laboratory rodents and on the absence of such “neutralization” effect in the case of *T. brucei rhodesiense* (man-infecting). It is not necessarily dependent, as you suggest, on the lysis of the organisms.—I am, etc.,

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Inversion of the Appendix

SIR,—In his letter reporting a unique late complication following the operation of inversion of the appendix Mr. G. H. Dickson (18 May, p. 385) invites accounts of other complications that may have been met with. I suspect that he will receive few replies as not many surgeons use this procedure and many are not even aware of what it implies. In addition, complications

TABLE I—Results of the plasma cortisol determinations ($\mu\text{mol/l.}$)

Participant No.	Control Samples		After Marathon
	1200 hr	1600 hr	
1–11	0.44 $\pm$ 0.19 (S.D.)	0.26 $\pm$ 0.10 (S.D.)	1.15 $\pm$ 0.36 (S.D.)
12	0.54	0.44	1.45
13	0.41	0.24	0.26
14	—	0.45	1.24