such circumstances it would appear that the only reason for treating the patient with cimetidine is to "buy time" in order to operate at a more convenient moment. For those surgeons who may still believe that partial gastrectomy is the operation of choice, healing of the ulcer preoperatively with cimetidine offers some technical advantages and we agree that cimetidine may be appropriate for the long-term treatment of patients whose cardiorespiratory state makes surgery more hazardous. Even in such cases, however, it is necessary to balance the low risk of elective surgery against that of an emergency operation should cimetidine fail to prevent complications of the ulcer. In this respect the frequency of painless recurrence described by Wormsley¹ is an alarming observation.

We do not accept the conclusion of Dr E Gudmand-Hoyer and his colleagues (29 April, p 1095), that "maintenance treatment with cimetidine is a suitable alternative to elective surgery in patients with duodenal ulcer subject to frequent relapses." Their failure rate with maintenance cimetidine was 12% in one year (or 23% if we include as failures those who withdrew from the cimetidine trial); this looks better than the 19% reported by Bodemar and Walan² and considerably better than the reulceration rate of 40% recently reported by Burland³; but it still falls far short of the results of surgery. For example, proximal gastric vagotomy is recognised to be followed by a rather high incidence of recurrent ulceration; in our series of over 200 only three patients relapsed within one year, although we now have 16 known recurrences after 9 years' experience with the operation. Goligher⁴ recently published his experience: only 4.3% of 117 patients developed recurrent ulceration over 5-8 years, although a further 11.1% had symptoms suggestive of recurrence over the same period. While we admit that cimetidine provides good long-term control of duodenal ulceration for many patients, even the good experience of Dr Gudmand-Hoyer and his colleagues does not suggest that cimetidine will have a major impact on surgical practice, as the accompanying figures show.

In fig A we show, year by year, the expected numbers of elective operations for duodenal ulceration on the basis of 100 operations per year before the advent of cimetidine. On the assumption (for which there is good evidence) that cimetidine allows healing of 80% of

ulcers⁵ we project three curves, *a*, *b*, and *c* as follows. In *a* it is assumed, from the figures of Dr Gudmand-Hoyer and his colleagues, that 12% of patients relapse during the first year of treatment with cimetidine and come to surgery but that no further relapses occur. In *b* it is assumed that each year 12% of patients being treated with cimetidine suffer a relapse and are referred for surgery. In *c* it is assumed that equal numbers of patients relapse each year, starting with 12% of the original group. For comparison we show also (fig B) projected numbers of operations assuming a relapse rate on cimetidine of 40%, since this was the rate recently reported by Burland.³ Whichever model is taken the effect of cimetidine on the need for elective surgery for duodenal ulceration is likely to be transient unless all the failures of really long-term cimetidine treatment are encountered in the first year. Thus it seems to us unlikely that cimetidine will prove a suitable alternative to elective surgery in the long term although it will undoubtedly prove very valuable in controlling ulceration temporarily.

C G CLARK
J H WYLLIE

Surgical Unit,
University College Hospital Medical
School,
London WC1

¹ Wormsley, K G, Symposium on Management of Peptic Ulceration, Royal College of Surgeons of Edinburgh, April 1978.

² Bodemar, G, and Walan, A, *Lancet*, 1978, **1**, 403.

³ Burland, W L, et al, in *Proceedings of Westminster Hospital Symposium on Cimetidine*. Edinburgh, Churchill Livingstone. In press.

⁴ Goligher, J C, et al, *British Journal of Surgery*, 1978, **65**, 145.

⁵ Wyllie, J H, *Postgraduate Medicine*, 1978, **63**, 91.

Changing the FRCS exam

SIR,—The Royal College of Surgeons of Edinburgh has proposed that the fellowship examinations should be reformed. Their proposals were arrived at after long and careful consideration and recommend a two-part examination. The first examination would be in principles of surgery, including basic science, while the second part would be taken in a specialty and examined towards the end of higher specialist training. These proposals are similar to the fellowship examinations in Australasia and Canada and are in line with specialty board examinations in North America.

DOUGLAS ROY

Department of Surgery,
Queen's University,
Belfast

Long-term self-administered subcutaneous heparin in pregnancy

SIR,—The excellent article by Mr G Spearing and others (3 June, p 1457) prompts us to comment from our experience.

The treatment dose of intravenous heparin was stated as 40 000 U daily, implying that dosage was not adjusted to response. We have found that heparin requirements are increased in pregnancy and that in cases in which there is extensive thrombosis or additional embolism these requirements are still further increased. One should be prepared to give up to 100 000 U of heparin/24 h by continuous infusion in these cases, with daily monitoring of activated partial thromboplastin time or thrombin clotting time.

The method of administration of subcutaneous heparin is of great importance and the original method of Griffith and Boggs¹ should be followed in order to avoid intradermal or intramuscular injections. The needle must always be inserted at right angles to the skin and no site other than the anterior abdominal wall may be used. It is our policy to continue heparin treatment until the patient goes into labour, at which time heparin is withheld until four hours after delivery, when, provided that the uterus is fully contracted and empty,

FIGS A and B—Projected effect of cimetidine on need for elective surgery for peptic ulcer.