from the preoperative day up to the seventh postoperative day with a Pitman ratemeter No 235. Readings as a percentage of heart count were recorded direct. Each patient's scans were analysed according to four different criteria (see below), all of which have been regarded as diagnostic by different authors. The last of these criteria has usually been used in combination with other criteria,¹ and others have used a 15% differential.² In each instance the scan was regarded as positive only if the criterion was met for 24 hours or more. Confirmation of a diagnostic count has not always formed part of the criteria; not to have done so here would have resulted in a higher number of positives, particularly when analysed by the first criterion, as shown.

Total patients screened	314
20% rise compared with preoperative count ³	73
20% difference between adjacent or opposite sites ¹⁻⁶	30
15% difference between adjacent or opposite sites ⁷	42
20% rise on previous day's count ¹	43

Much the highest number of positives is recorded when comparison is made with the preoperative count. Mr Roberts's suggestions for improved accuracy are desirable, but some of the attractions of the ratemeter compared with the scaler are then lost. Whether or not all these suggestions are followed, we think that only criteria which involve comparison on the same day should be used; in this way the effect of background, which forms an increasing proportion of the count, is minimised and the importance of daily variation in the magnitude of counts reduced. During the first few days, distribution of ¹²⁵I-fibrinogen between intravascular and extravascular spaces is changing and so is the geometry of counting—not only of the legs but of the precordium. We have found a general increase in later leg counts and think that the relative proportion of count formed by extravascular fibrinogen increases more in the legs than the precordium. We realise that the same percentage reading on one day may still represent a different magnitude of counts on another, but we think this is a further reason why comparison with a former count is best avoided. Although the risk of missing bilateral thromboses would seem to be greater if comparison with a former count is excluded, the diagnosis based on such criteria correlates well with phlebography.⁷

P ATKINS
I KEITH BROWN
G J SANTER
P M ROBB

Walton Hospital,
Liverpool

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Promiscuity and infertility

SIR,—With reference to your leading article (30 August, p 501) there may be other effects of promiscuity than that of venereal disease and subsequent infertility. Green-Armytage¹ reported in 1943 from the West London Hospital that a group of 20 recently married

women who did not use artificial contraception were observed over a period of two years and compared with a group of similar women for a similar period who used barrier methods. The 20 who did not use artificial contraception developed what Green-Armytage called full maturation of the uterus and a high proportion became pregnant, while the 20 who used barrier methods retained what he called a hypoplastic or premarital state of the uterus and five developed cervical erosions. I have looked through the *Index Medicus* and made other inquiries but have not been able to find reports of a confirmatory or conflicting nature. Would it not be possible to repeat the investigation using, at the end of two years for two such groups, assays of oestriol levels in the plasma and of macrophage and lymphocyte competence? The interpretation of such assays might be of interest.

MICHAEL WILKINSON

Buckfastleigh, Devon

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Complications of central venous catheterisation

SIR,—The complications of central venous catheterisation are important, and Dr M J Greenall and his colleagues (14 June, p. 595) have raised some provocative technical points.

Radiographic visualisation of the catheter is essential as soon as practicable after insertion. Only radio-opaque catheters are acceptable. Nevertheless it is not possible always to x-ray a patient immediately after insertion of a central venous catheter and before its use for fluid infusion. The following technical points help to reduce the possibility of acute complications.

- (1) Advancement of a correctly placed catheter is gentle and easy.
- (2) Do not coil a long catheter up in the right atrium (or right ventricle!) by advancing it too far. Location of the tip in the ipsilateral innominate vein is preferable.
- (3) After insertion and before fixing the catheter attach a syringe containing isotonic saline, inject a millilitre or so to clear any clot, and aspirate blood into the syringe. Do not use undue force when aspirating. If the tip is lodged incorrectly or against the intima of a central vein excessive force is pointless and perhaps even harmful. Should gentle aspiration not produce free-flowing blood inject a little more saline, withdraw the catheter 2 cm, and repeat the aspiration test. Failure to obtain blood is a contraindication to further use of this catheter.

(4) Connect the intravenous drip and observe that it flows freely. The meniscus in the central venous pressure manometer tubing should fall freely to a "sensible" pressure. Erratic pressure measurements may be an early sign of an incorrectly placed catheter.¹

(5) Compress each side of the neck separately. A rise in the central venous pressure greater than 10 cm H₂O suggests the catheter tip is in the ipsilateral internal jugular vein.²

(6) Look at the meniscus and look for two distinct oscillatory patterns: (a) a larger amplitude respiratory oscillation, and (b) a smaller amplitude, higher frequency cardiac oscillation. If these are not both visible, do not infuse fluid nor take pressure readings until the aspiration test is successfully repeated.

A posteroanterior chest radiograph as suggested by Dr Greenall and his colleagues may be impracticable. Will the projection

on an anteroposterior chest film serve the same purpose? It is also impracticable that the arm should not be abducted beyond 90° in some patients requiring intensive nursing care and in certain postural requirements in the operating theatre. In infants wide arm abduction is commonplace.

Cannulation of the jugular³ or subclavian⁴ (or, less commonly, femoral) vein avoids a problem from shoulder movement, and, despite the risks^{5,7} and reasoned arguments for the use of the arm veins,⁸ other veins continue to serve a valuable purpose in experienced and careful hands.

The advice to use only electrolyte solution in the first 12 hours will not necessarily avoid serious consequences of accidental extravasation. On two occasions in my experience resuscitation using colloid infusion through an urgently cannulated subclavian vein was life-saving by the only adequate venous route obtainable.

One must question the wisdom of advising "routine" needle aspiration of the pericardial sac in a resuscitation programme for cardiac arrest in a patient with a central venous catheter in situ. A clinician experienced in this technique is rarely likely to be on the scene.

Withdrawal of an existing central venous catheter by 15 cm before its use in resuscitation can apply only to a arm (or leg) catheter if it is not to be pulled out altogether at an inconvenient moment for the patient.

This paper by Dr Greenall and his colleagues reminds us of two important but not widely appreciated facts. Firstly, cardiac tamponade and other major perforation complications can occur during the first minutes following the insertion of a central venous catheter by whatever route. Secondly, a high quality chest radiograph showing the catheter tip correctly and apparently safely placed, although essential, does not exclude the danger of a complication, immediate or delayed.

JOHN WILLIAMSON

Department of Anaesthetics,
University Hospital of Wales,
Cardiff

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Vaginal cytological examination in anorexia nervosa

SIR,—In connection with the interesting paper by Drs S J Nillius and L Wide (16 August, p 405) I should like to mention a very simple method of monitoring the effect of human chorionic gonadotrophin therapy in amenorrhoeic patients with anorexia nervosa—examination of the vaginal smear. It is easy to perform, quick, and completely harmless. The use of haematoxylin-Shorr staining is advisable.

Of five patients with anorexia nervosa examined before treatment the vaginal smear showed total hormonal ovarian insufficiency in four, while in the other five some oestrogenic effect was demonstrable. There was a