noticed and one of them became aggressive to another patient. When asked, the patients gave clear reports of subjective feeling of mental and muscular unrest and inability to sit still. They both responded to an intramuscular test dose of 10 mg procyclidine hydrochloride, which produced marked improvement after half an hour. The symptoms recurred four to five hours later. Both patients settled when the dose of their antipsychotics was reduced and did not need routine anti-Parkinsonian medication.

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Rapid poisoning with slow-release potassium

SIR,—I would like to take issue with the emergency management of hyperkalaemia as suggested by Drs R N Illingworth and A J Proudfoot (16 August, p 485).

The most important and urgent requirement for patients with very high serum potassium concentrations is the protection of the myocardium, and this is achieved by the administration of often large amounts of intravenous 10% calcium gluconate (up to 50 ml is often necessary). This should result in a prompt reversal of electrocardiographic signs and the danger of arrhythmias is rapidly diminished. The other measures which are commonly used (intravenous 5% dextrose with insulin and intravenous sodium bicarbonate) in the management of high serum potassium concentrations will, of course, lower the serum potassium and hence reduce the risk of arrhythmias, but should not be given until the calcium has been given in large enough doses. Following these emergency measures, of course, steps to correct the situation giving rise to hyperkalaemia and to relieve the body of its total excess potassium will be needed.

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Spironolactone prophylaxis in mountain sickness

SIR,—Squadron Leader G J Turnbull (14 June, p 1453) wrote about his experience with spironolactone on Mount Kenya. In 1976 my wife and I trekked in Nepal from 600 to 4400 metres spending four days above 3000 m. We both experienced extreme lassitude and fluid imbalance but as the level of activity was low we were able to manage—and in any case it was a fairly simple matter to transport us below 3000 m and await the return of the rest of the party as we were retracing our steps on the return journey.

This year we decided to go on a 16-day trek in the Andes never going below 3000 m from start to finish, climbing a total of over 7000 m and reaching a height of about 5000 m. As it was a round trek we had no wish to be left on route so after a survey of the literature we decided to take spironolactone 25 mg three times a day from the day of our arrival in Peru for one week and then 25 mg twice daily for the rest of the trek.¹⁻³ Neither of us suffered any altitude effects, unlike several in the party.

I am not putting this forward as a clinical trial but for anyone going on a trekking holiday at this altitude to take spironolactone in this way seems to be without risk and to have great potential benefit. Trekking while suffering from altitude effects is hard work for anyone but especially for a pensioner and his wife.

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- ¹ Brookfield DSK, Liston WA, Brown GV. *East Afr Med J* 1977;54:689-91.
- ² Currie TT, Carter PH, Champion WL, et al. *Med J Aust* 1976;2:168-70.
- ³ Anonymous. *Lancet* 1976;ii:1177-9.

Percutaneous central venous cannulation

SIR,—We read with interest the article by Dr M Rosen and others (2 August, p 372). We endorse their view that the percutaneous insertion of central catheters via the infraclavicular subclavian vein should be performed by those trained in the art and house officers should be closely supervised during such an operation. The creation of new problems for patients already in jeopardy from their original pathology or surgery should be avoided at all costs. A prospective study in 1971 demonstrated that non-infectious complications correlated with clinical experience in the technique.¹ In addition to the points made by the authors concerning this route of insertion, we feel that it should not be used for patients who are restless and uncooperative; have a diminished pulmonary reserve or, for example, are developing a contralateral haemopneumothorax after trauma; or possess abnormal anatomy because of previous clavicular fractures, a thoracoplasty, or local radiotherapy.

The most significant complications associated with the procedure are air embolism, pneumothorax, and injury to the subclavian artery or brachial plexus. Significant variations in the anatomical relationship of the subclavian vein to the clavicle and first rib have been well demonstrated by necropsy studies.² Contrast radiography studies of the veins have also confirmed these findings.^{3,4} The course of the subclavian vein on the right and left sides differs slightly, and changes with posture have been emphasised. We have found that, with the patient supine and prior to the draping and preparation procedure, a short time must be spent studying the topographical anatomy.

The subclavian venous pulse may be seen by inspecting the infraclavicular fossa while the abdomen is palpated. In addition using a Sonicaid ultrasound probe the characteristic venous hum may be detected by trial and error. This is made easier by getting the ipsilateral arm a firm and rapid squeeze. The point at which the subclavian vein passes below the clavicle may be found and marked with indelible ink. Similarly, the pulsatile flow sounds from the artery are easy to recognise and this vessel may also be marked on the skin surface (figure). This simple technique effectively localises the vessels and thus arterial and brachial plexus injury are avoided. The catheterisation procedure must still be performed carefully and gently to avoid creating a pneumothorax. We believe this manoeuvre gives the novice a more precise localisation of the subclavian vein and it is of special value in obese and heavily built patients.

Finally, the problem of catheter embolism will continue to occur if through-needle catheters are used (that is, Bard-I-Cath and Abbott Drum-catheter). Such complications and indeed tragedies are still being reported to the medical defence organisations. Even if meticulous care is taken, any sudden unex-

Doppler probe detecting the subclavian artery (A) and vein (V).

pected movement by the patient can cause the catheter to shear on the needle bevel. Furthermore, after the insertion is completed and the flimsy plastic sheath fitted, the patient has been provided with a central venous line passing through a "sword of Damocles" and protected only by a plastic scabbard. This serious risk should not be accepted by the clinician on behalf of the patient when safer alternative catheter designs are available.

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- ¹ Bernard RW, Stahl WN. *Ann Thorac Surg* 1972;13:615-24.
- ² Borja AR, Hinshaw JR. *Surg Gynaecol Obstet* 1970;130:267.
- ³ Land RE. *Arch Surg* 1971;102:78.
- ⁴ Land RE. *J Thorac Cardiovasc Surg* 1972;63:564.

Emphysema: beginning of an understanding

SIR,—I read with interest your leading article on emphysema (5 April, p 961) and also the letter by Dr M C S Kennedy (2 August, p 388). I agree that little attention has been paid to nitrous fumes in the causation of emphysema, especially in mining.

The prevalence of emphysema in coal miners is high and it is also high in metal-liferous miners. I have had experience of underground conditions in the West Cumberland iron ore mines over a period of nearly 50 years. Explosives are required to fragment and bring down the ore and large quantities of nitrous fumes are generated by the blast. Concentrations of nitrogen dioxide near the working face can rise to 300 parts per million and remain high for up to two hours; thus miners in former years spent a large part of their working life in concentrations of nitrogen dioxide 50-60 times the permissible level. Men in those days claimed that the fumes rather than the dust were the cause of their shortness

of breath. Morbidity from emphysema was high and it was obvious that the problem had to be solved.

It has been successfully solved by improving ventilation and total relegation of blasting to the end of the shift. Now after 40 years there is little dust and no nitrous fumes, and pneumoconiosis and emphysema have ceased to exist and the industry is a healthy one.

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Drains and sutures

SIR,—Mr N M Koruth and Mr P F Jones (5 July, p 45) begin their article on drains and sutures by emphasising that these play an important role in the recovery of the patient after operation. It was therefore disappointing that the accompanying picture showed a vertical laparotomy wound supported by retention sutures, which incidentally appeared to be tied rather tightly.

Retention sutures are thought to provide additional insurance against abdominal dehiscence,¹ but equally good results are achieved without their use.² One-layer mass suture gives good results with either continuous³ or interrupted⁴ methods, and there seems little to choose between absorbable (Dexon) or non-absorbable (Prolene) suture material.⁵ Furthermore it has been suggested that the use of tension sutures may cause haematomas in the abdominal wall, increased wound infection, and increased wound pain.⁶ The article ends by stating that suture marks are determined by the time for which a suture is left, its tension, and its position. As retention sutures are kept in place for 14 days, and often tied too tightly, they may cause ugly scars.

Thus it appears that retention sutures have no particular advantage and may even be harmful, so it is unfortunate that they should be so prominently displayed in your columns.

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¹ Lord JW, Pfeffer RB, Golomb FM. *Surg Gynaecol Obstet* 1969;129:758-60.

² Jenkins TPN. *Br J Surg* 1976;63:873-6.

³ Pollock AV, Greenall MJ, Evans M. *J R Soc Med* 1979;72:889-93.

⁴ Bentley PG, Owen WJ, Girolami PI, Dawson JL. *Ann R Coll Surg Engl* 1978;60:125-7.

⁵ Cameron AEP, Gray RCF, Talbot RW, Wyatt AP. *Br J Surg* 1980;67:487-8.

⁶ Goligher JC, Irvin TT, Johnston D, et al. *Br J Surg* 1975;62:823-9.

* * * We sent a copy of this letter to the authors, whose reply is printed below.—Ed, *BMJ*.

SIR,—The first sentence of Mr Cameron's letter implies that deep retention sutures have an adverse effect on wound healing but he does not produce evidence of this. Retention sutures markedly diminish the number of dehiscences in vertical laparotomy incisions closed with catgut (reference 6 above), so they do have an effect. The question which cannot at present be answered is whether deep retention sutures are useful in incisions closed with wire, prolene, or nylon.

Mr Cameron's own work (his reference 5) shows that two of his 361 patients who had mass closure of a vertical incision suffered dehiscence and both of these had emergency laparotomies. We close all vertical abdominal incisions with continuous 0 or 1 prolene, but

in emergency procedures (especially for intestinal obstruction or peritonitis), in operations on malnourished patients, and in laparotomies for malignant disease we also insert all-layer retention sutures of nylon. Using this regimen we had performed at the last count over 1000 consecutive emergency and elective laparotomies through vertical incisions without a wound dehiscence, and this record has been maintained over the last year. Mr Cameron cannot carry his point that deep retention sutures are unnecessary until he can quote as large a series as ours without a disruption. His suggestion that retention sutures may be harmful is not supported by our experience, especially in relation to wound sepsis.

An interesting point is whether the use of retention sutures can be abandoned in midline vertical incisions closed by Jenkins's technique (reference 2 above) but should be retained in paramedian incisions, to which this technique is not so well suited—the only disruption in the 1505 patients in Jenkins's series was in a paramedian wound. Because much of our work is on the colon and rectum many of our incisions are left paramedian wounds, closed with two layers of 0 prolene, supported by retention sutures. Many of our patients carry a high risk of wound dehiscence and we would not on present evidence feel justified in foregoing retention sutures.

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Kidney biopsy

SIR,—The classical technique of percutaneous renal biopsy described by Drs Richard McGonigle and Paul Sharpstone (23 February, p 547) gives excellent results in expert hands. We were surprised, however, that the authors and subsequent correspondents (12 April, p 1054; 24 May, p 1271; 26 July, p 306) did not mention the modified technique of biopsy under fluoroscopic control following intravenous contrast injection. In 82 consecutive cases we have obtained adequate tissue in all but one instance, with only two cases of minor perirenal bleeding (not requiring transfusion). The accuracy with which the needle, a Tru-cut disposable, can be placed has encouraged us to take at least two specimens for light, immunofluorescence, and electron microscopy. Particularly for a small department, where the skills required for the blind approach are harder to come by, we believe that the fluoroscopic technique is the one of choice.

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The pre-pregnancy clinic

SIR,—We were interested in Mr Geoffrey Chamberlain's article (5 July, p 29) and would like to comment on his findings in the light of our experiences with a pre-pregnancy clinic in Melbourne. The pre-pregnancy counselling service, which is a pilot project of the Community Health Program, was set up in August 1979 and the weekly clinic opened in November that year. In the first nine months of operation just over 100 women attended. The outcome of pregnancy in women over 30

(25%); the availability of various options for birth such as Leboyer birth, birth centre, and epidural anaesthesia (21%); and previous perinatal death (20%) were the three commonest reasons for presenting. Other categories were previous bad birth experiences, pre-existing illness (for example, severe hypertension), and anxiety about previous induced and spontaneous abortions.

Two factors distinguish this service from the one described in the article. Firstly, the setting is a community health centre in an inner city suburb instead of a major obstetric hospital (though the department of obstetrics and gynaecology of Monash University initiated the service and provides information back-up). Secondly, two-thirds of women using the pre-pregnancy counselling service are self-referred, having heard of the clinic by word of mouth or through local newspapers and libraries. We wonder whether the need for the service is more clearly apparent to women themselves than to medical practitioners. Our referred clients come from infant welfare sisters (at baby health centres) or from family planning clinics. Because of self-referral about 10% of clients present with queries which do not fall within the scope of the clinic and these have been referred for genetic counselling or the investigation of infertility, as appropriate.

We would like to support Mr Chamberlain's comments about the importance of interest and knowledge of data collection locally and nationally, the ability to know where to look for information, and the time spent on interviewing and listening. We might add that some skills of counselling in grief and loss and in sexual problems seem to be other important elements in our service.

The pre-pregnancy counselling service also has a health education arm, which is at present involved in group work with adolescents and adults.

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Adverse effect of plasma exchange on anti-D production

SIR,—We were stimulated immunologically by the paper of Mr G R Barclay and others (28 June, p 1569) but disagree with their explanation for the increased anti-D production in their patient. Our comments are based on experience gained from treating 10 patients who had previously given birth to infants suffering from rhesus haemolytic disease of the newborn, who showed high circulating concentrations of anti-D in their current pregnancy with raised liquor bilirubin levels, and who were treated by intensive plasmapheresis.

Six healthy children have resulted from these 10 pregnancies. Fetal or neonatal mortality probably resulted from a combination of: (a) delay in initiating plasmapheresis; (b) not applying the treatment with sufficient intensity; and (c) complications of prematurity. In no case did we meet with the sharp rise in anti-D concentrations encountered by your authors. They postulate that plasma exchanges performed on their patient removed plasma inhibitory factors, which coincided with, and perhaps resulted in, elevated anti-D concentrations. We suggest an alternative and