even though they do contain 25% of fruit juices, and contain (generally) sulphur dioxide, which acts as a preservative of vitamin C.

Fruit squashes are almost entirely produced from juices imported into this country in concentrated or unconcentrated forms, and the retention of ascorbic acid is extremely variable. It is a fact that as yet no claims are being made for vitamin-C contents in any squashes, and the relationship suggested in your answer—i.e., that the fruit-squash concentrate should contain one-quarter of the ascorbic acid in the fresh juice—cannot be upheld.

The use of the term "concentrates" in connexion with these squashes is open to objection. Under the existing S.D.I. regulations fruit squashes are placed in the category of "concentrated beverages," but this term possesses no significance to the general public. On the other hand we have the Ministry of Food welfare orange juice, which is in fact a concentrated juice, and national rose-hip syrup, which is similarly a product which has been concentrated from the raw juice or extract. In this case the concentrated product contains many times more vitamin C than the fresh juice. In a further category we have black-currant syrup and purée, which contain less ascorbic acid than the straight juice or pulp, but in which the vitamin C is remarkably stable.

As a means of comparing these figures the following table may be of use:

Substance	Ascorbic Acid in 1 oz. (28.4 ml.)
Ministry of Food welfare orange juice	57 mg.
National rose-hip syrup	57 mg.
Black-currant syrup	20 mg.
Black-currant purée	20 mg.

It is probably wise to regard only those products whose labels indicate a definite guaranteed ascorbic-acid content as having any appreciable vitamin-C potency.—I am, etc.,

Bristol.

VERNON L. S. CHARLEY.

Penicillin for Infected Hands

SIR.—The article by Mr. Frank d'Abreu, Surgeon Lieutenant Charles M. Flood, and Dr. Harold B. Hewitt on penicillin for the treatment of infected hands (Oct. 18, p. 603) should be publicized widely if only to cut the rate of absenteeism in these critical days. The letter by Dr. John P. Raw (Nov. 1, p. 707) on the local application of penicillin should also be noted for an economical and very valuable method. It was one that I introduced to the 84th General Hospital in October, 1944, using the 10,000-unit tablet of calcium penicillin because of its slower rate of absorption.

My method was to introduce 1 or 2 tablets into the abscess cavity and occlude the wound wherever it was possible with elastic adhesive bandage, leaving it unattended for 24–48 hours. A second application of the tablets was sometimes necessary. Even after the first dressing it was remarkable to note the diminution in inflammation and induration around the lesion. The method was very valuable in the case of carbuncles and solitary boils. Quite often the central slough in a carbuncle would come away with removal of the first dressing.

I agree with Dr. Raw that the surrounding inflammation and induration seem to form a barrier to blood-borne penicillin and that the local application is much more effective.

Since my return to civilian practice I have continued to use this method and have only found it necessary to use parenteral penicillin in those cases where the abscess, boil, or carbuncle is in its very early stages—that is, before the barrier effect is set up.—I am, etc.,

London, E.4.

H. WINCH.

SIR,—I read with much interest the method of local penicillin treatment as described by Dr. John P. Raw (Nov. 1, p. 707). I have used this method extensively for the past three years with outstanding results. I first treated cases of R.N. personnel with the 10,000-unit tablets as issued to the Services. Hand and foot infections were successfully treated with a minimum of incision. The treatment of tendon-sheath infection was very satisfactory. In most cases pus formation had ceased in 72 hours and healing and function were complete in about 16 days.

The most outstanding case, however, was that of a farmer with a deep palmar infection. The hand had the colour and contour of a boxing glove, with severe lymphangitis and oedema extending to the axilla. Four 10,000-unit tablets were inserted deep in the slough situated in the centre of the palm, and a small gauze dressing covered with G.P. tissue was applied. Within 12 hours serum and lymph were pouring from the slough area, and the slough came away the following day. The contours of the hand and arm were restored in 24 hours. In 72 hours active movements of the fingers were encouraged. With difficulty I restrained him from resuming full duty on the seventh day.

To facilitate the introduction of the tablet I thrust a grooved director deep into the septic area, place the tablet on edge in the groove, and push it on with a probe. The point of the director is depressed and the tablet runs over the end and remains. The director and probe are then withdrawn. The method is very useful in the treatment of breast abscess, and the size of the incision can be greatly reduced. In some cases of breast abscess I have combined local treatment as described with twice-daily doses of 300,000 units. I am not yet satisfied that the results are an improvement on the local method alone.—I am, etc.,

Alexandria, Dumbartonshire.

WILLIAM SCOTT.

Road Accidents

SIR,—Dr. E. Granger (Nov. 1, p. 709) appears perhaps to confuse the activities of the tongue and of the mind. High output of the one is not always accepted as evidence of good functioning of the other, and the mind of the silent driver may be better occupied than by trivial conversation. Does Dr. Granger feel less safe when in public-service vehicles than when driven by his garrulous acquaintances, and would he advocate, for safety reasons, that the drivers of buses and coaches should sit with the passengers, in order to enjoy the benefit of distracting conversation?

The apparent attempt to discredit the saying, "Don't speak to the man at the wheel," which of course goes back long before motor-car days, is a poor contribution to make to road safety. If, as your leading article suggested, medical men in general are seriously perturbed about road accidents, they may be interested to know that they can make some positive contribution by joining, for a very modest subscription, an association which neither supports nor is supported by any sectional interest, but which exists solely for the quite praiseworthy motive of the promotion of safety and the preservation of life on the roads.—I am, etc.,

London, N.W.8.

R. J. CLAUSEN.

B.C.G. Vaccination under the Red Cross

SIR,—With more than half a year's experience of B.C.G. vaccination in several European countries the Danish Red Cross is now in a position to give a fairly detailed account of its work in this field. Starting with Poland it has extended its work to Yugoslavia, Hungary, Austria, and the American and British zones in Germany. The sum allotted to this work is 3.5 million Danish crowns, and it is actively supported by the Danish Government and the State Serum Institute, whose chief, Dr. Ørskov, has published a commendatory article on B.C.G. vaccination in the September number of the *Journal of the Danish Red Cross*.

The work has hitherto been carried out by 15 teams, each composed of one doctor and two nurses, but the ultimate target is 60 such teams. Denmark cannot alone supply as many as 60 doctors trained in B.C.G. work, and such experts are therefore being recruited in Norway and by sending doctors from various other European countries to Denmark, where they are initiated into the technicalities of this work. In principle everyone from the age of 0 to 80 is eligible for B.C.G. vaccination provided he or she is tuberculin negative, but as—in Poland, at any rate—practically everyone over the age of 25 is tuberculin-positive it is under this age that this work is confined in practice. This vaccination costs only about sixpence per head.

In order to provide an adequate supply of fresh vaccine the Danish Red Cross has purchased three aeroplanes to carry it to different parts of Europe. In Yugoslavia the Danes have handed over their work to the Yugoslav Government after

working in this country for nine months. In the *Journal of the Danish Red Cross* for October Dr. Henningsen points out that in the past half-year the Danish Red Cross has examined about half a million persons, each of whom was dealt with three times. Tuberculin-testing is so well organized that 1,000 persons can be tested by the same nurse on the same day. Between 1,500 and 2,000 persons have been examined every day by each team, and in a recent interview in *Morgenbladet* for Oct. 28 the President of the Danish Red Cross, Kai Hammerich, refers hopefully to the prospect of vaccinating a million persons every month.

So we see that after twenty years of research and mass experiment the Danes have not only made out a very convincing case for B.C.G. vaccination but have also made it an article for export. What of the attitude of my fellow countrymen in England to B.C.G.? Masterly inactivity verging on the sublime? Or on the doddery?—I am, etc.,

Sunnfjord, Norway.

CLAUDE LILLINGSTON.

Intravenous Procaine

SIR,—Dr. Peter Parry (Oct. 25, p. 669) refers to intravenous injections of procaine, saying that "the recommended dose of 10 ml. of 1% solution can be much exceeded with apparently complete safety." It should be realized that it is not the total dose which matters but the rate of injection. Procaine is rapidly broken down in the blood stream by the enzyme procaine esterase into diethyl-amino-ethanol and *p*-aminobenzoic acid. If the rate of injection is greater than the rate of hydrolysis, the concentration of procaine in the blood stream will rise and cause toxic symptoms in the following order: tachycardia, muscular twitching, convulsions, respiratory failure, death.

In the average fit adult tachycardia usually appears if the rate of injection exceeds 20 mg. per minute, and as a general rule this should not be exceeded. If an overdose has inadvertently been given, the intravenous injection of a short-acting barbiturate such as soluble thiopentone is the best treatment. The barbiturates not only act as anticonvulsants but appear to have a true antagonistic action to the analgesics containing the *p*-aminobenzoic-acid grouping.—I am, etc.,

St. Albans, Herts.

C. LANGTON HEWER.

Peptic Ulceration

SIR.—The annotation (Oct. 18, p. 621) on the findings of Gibbs perpetuates two widespread fallacies to which grave exception must be taken. (1) Radiographic "evidence" of healing. Nothing is more illustrative of the divorce of radiography, indeed of clinical medicine, from morbid anatomy than the belief that if x-ray evidence of ulcer disappears the ulcer is healed. In the case of gastric ulceration, endoscopy will show unhealed ulceration six or twelve months after x-ray signs have disappeared. Morbid anatomists of the living—surgeons—confirm this also in the case of the duodenum. The pertinent question is raised, "What is the basis (a) of the x-ray appearances of ulceration and (b) of the symptoms?" The classic symptom-free intermissions with a persistently unhealed ulcer are interrupted by periods of "activity." In what does this consist? Extension of the ulcer? No, a symptom-free ulcer of the stomach may slowly extend to an enormous size. The answer is simple: both symptoms and almost entirely the x-ray signs are produced by periodic flares of circum-ulcerous cellulitis.

The genesis of pain by the resultant interference with the musculature and gastric tension surely has been adequately established by numerous clinical workers such as Hurst, Ryle, Douthwaite, and others, though the idea of hyperchlorhydria burning the sore in the stomach seems ineradicably widespread still. The gastroscope establishes beyond doubt the source of occult blood as the swollen inflamed mucosa around the ulcer, though the common belief is an origin in bleeding granulations not shown endoscopically. Indeed the only symptoms arising from the ulcer itself are massive haemorrhage from erosion of large arteries and acute peritonitis from perforation. The oedema of mucosa and musculature together with muscular contraction exaggerate enormously the x-ray crater. Careful examination of the lesser-curve outline shows that the excre-

science is in reality largely an appearance produced by a filling defect due to oedematous mucosa. With the subsidence of the oedema symptoms rapidly disappear; next the occult blood ceases; finally the x-ray crater, with all attendant rigidity spasm, etc.

The gastroscope, however, tells a most disillusioning tale. Healing of the flat area of epithelial deficiency, now symptomless and signless, may take a further six, nine, or more months before safe epithelialization is attained, even with the most stringent and irksome medical treatment. These facts are readily proved in cases of gastric ulceration; there is no reason for doubting that they apply equally to the duodenum. All, therefore, that can be claimed for radiography is the demonstration of increase or recession of circum-ulcerous inflammation. The definition of "activity" of an ulcer might be stretched to include this most characteristic phase of the condition, but the claim to demonstrate "healing" must be emphatically rejected.

(2) The other objection one must raise is in a large part conceded by your review—that the test-meal by any technique gives anything resembling a realistic demonstration of gastric secretion. How indeed can it when it concerns itself solely with hydrochloric acid? It may be that this secretion is to some extent parallel with that of the enzyme, but it is a very unsafe assumption. The reverse of this assumption leads to one of the pathetic illusions of medicine (like the instantaneous sterilization of the skin by a dab of antiseptic before a hypodermic injection). The patient has achlorhydria: all that is necessary to restore gastric function is to administer a few minims of dilute hydrochloric acid at intervals throughout the day. Pepsinogen *here*, it is presumed, is secreted normally. Admittedly more difficult and tedious, the estimation of peptic activity of gastric secretion is surely the truly relevant factor, for which one will search in vain for attention in the consideration of peptic ulceration; instead of which general attention is universally directed to neutralizing an acid which one presumes eats holes in the stomach and duodenum. The statement is made that concentration of HCl above 0.08% produces no increase in peptic activity. What then becomes of the simple faith in hyperchlorhydria? Until attention is turned from acid-and-alkali-test-tube theory and practice in peptic ulceration to some real indication of secretion it is not to be hoped that much advance can be made in either.—I am, etc.,

London, W.1.

C. JENNINGS MARSHALL.

Education for General Practice

SIR.—Dr. James M. Taylor (Nov. 1, p. 706) makes a plea for the medical student to be employed as a nursing orderly at the same time as he is engaged in dissecting the cadaver. It is as well to recollect that the appalling mortality from puerperal sepsis persisted unabated in the lying-in wards of the Vienna hospitals until Semmelweis put a stop to this route of cross-infection. Until the student has thoroughly appreciated in his surgical training the need for rigid asepsis, he is safer out of the surgical wards. In any event the study of anatomy is a full-time task and will not be made less burdensome by devoting precious time to sweeping floors and emptying bedpans.—I am, etc.,

Southsea, Hants.

J. A. SEYMOUR-JONES.

The G.M.C. and Medical Education

SIR.—Dr. C. E. S. Flemming (Oct. 25, p. 669) says my letter on radical revision of the curriculum "lands us in a quandary." Patients whose rectal cancers are examined too late in the disease are in a much worse one. Such are common under the present education. My gravamen is that the student of medical science is *not* taught "those things that he *will want to know*," and that the art of medicine, which is half of general practice, needs unfolding in the impressionable years in hospital. The letter of Dr. James Taylor (Nov. 1, p. 706) gives cogent support to my plea for educational reform, and offers an admirable practical suggestion. A panel of G.P. tutors would, he claims, be mutually beneficial to student and teacher. It would counteract the degradation of the family doctor which he so poignantly describes.

Dr. Flemming asks whether the young doctor would find effective help at a health centre. No, the name is a misnomer