schizophrenic vagrant automatically merits detention "in the interests of his own health and safety."¹ For many the memory of the chronic wards inclines them to the informality of the roads rather than that of the hospital.

It has been said of such men in a common lodging house, "They're head cases. It isn't their fault. But they shouldn't be here."²—I am, etc.,

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ANTHONY FLOOD.

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- ² *Forgotten Men*, 1960. National Council of Social Services Incorporated.

Oranges and Lemons

SIR,—I am old enough, alas, to remember the publication of the news of the Antarctic tragedy in 1913, but I have read Scott's diary on numerous occasions since, and I have read Cherry-Garrard's *The Worst Journey in the World*. I lent and lost the last some 20 years ago.

Petty Officer Evans's courage in marching literally until he died, and Titus Oates's gallantry in ridding Scott of his burdensome presence, are no less commendable because a diagnosis of scurvy is substituted for one of concussion or frostbite.

From January 7 onwards Scott's diary contains references to the fitness of Evans and Oates. On January 24, 1912, Scott wrote, "I don't like the easy way in which Oates and Evans get frostbitten." It was on February 4 that Scott recorded two falls by Evans and the sentence, "The party is not improving in condition, especially Evans who is becoming rather dull and incapable." Evans died on February 17, having marched each day with his companions.

Oates's symptoms became more acute on March 2, and there is daily reference to him in the diary from then onwards. "He makes no complaint but his spirits only come up in spurts now, and he grows more silent in the tent," was recorded on March 6, and on March 15 or 16 he left the tent with the remark, "I am just going outside and may be some time."

On March 8 there appeared in the diary the first reference to Dr. Wilson becoming disabled, and on March 18 Scott recorded, "My right foot has gone, nearly all the toes," and next day he wrote, "Amputation is the least I can hope for now, but will the trouble spread?" There is no reference to "little Bowers" developing sore feet.

It is true that Scott considered that Evans had concussion, and he regarded the condition of the feet of all of them as being due to frostbite. The gradual onset of symptoms which I have briefly sketched, the loss of energy, and the mental confusion are all consistent with a diagnosis of scurvy.

The requirement of vitamin C is a quantitative one and the biggest men doing the heaviest work would be expected to be the first to expend their reserves. Scott was puzzled by their failure. In his Message to the Public he wrote, "The advance party would have returned to the glacier in fine form and with surplus food but for the astonishing failure of the man whom we had least expected to fail. Edgar Evans was thought the strongest man of the party." Both Oates and Evans were chosen for the polar journey because of their physique. The antiscorbutic used during the expedition was calcium lactate.

In case Lord Valentia (April 6, p. 955) thinks that I am out of sympathy with the Scott epic, may I say

that I never see Peter Scott on television but I have a vision of Scott writing his farewell letter home: "Make the boy interested in natural history if you can." In these days of soft living I frequently think of another sentence in that letter. "How much better has it been than lounging in too great comfort at home."—I am, etc.,

Perth.

HARRY GRAHAM.

E.C.G. and Coronary Disease

SIR,—In the recent discussions in the *Journal* concerning the value of the E.C.G. in the detection of subclinical coronary heart disease I was surprised that both the leading article (February 16, p. 417) and Sir Aubrey Rumball and Dr. E. D. Acheson (p. 423) ignored the important work described previously by Brody.¹ As his findings lend further support to the idea that latent coronary heart disease can be diagnosed by E.C.G. after exercise, I will recount the important ones.

Brody performed an exercise test on 756 healthy American businessmen whose ages ranged between 23 and 74 years, and followed them at his clinic for periods of three to ten years. Two hundred and eighty of the subjects examined had positive tests according to Master's original criteria.² Of these, 32 (11.4%) went on to develop coronary heart disease compared with 4.2% of the control group, showing again that these criteria are of little practical value.

Brody then went on to analyse the types of electrocardiograph changes that occurred in this group of 280. One group of 23 subjects showed depression of the S-T segment by 0.5 mm. or more in such a way that it subtended an angle of 90° or more with the vertical. Of these, 16 (70%) went on to develop coronary heart disease; six had a myocardial infarction, and ten developed angina. Five of the remaining seven developed E.C.G. changes at rest, but none developed symptoms during the period of observation.

These findings support those of Rumball and Acheson, who observed that a substantial risk was evident when exercise produced a sagging 0.5 mm. depression of the S-T segment. The risk that they noted, however, was much less dramatic than that described by Brody (15 out of 65 (23%) against 16 out of 23 (70%)). The reason for this may be related to the age differences in the two groups examined (Brody's subjects were older) and to the incomplete follow-up by Rumball and Acheson.

By adopting Brody's criteria, which are similar to those defining groups B2 and C in the paper by Rumball and Acheson, it might well be possible to select from the community at large an "extremely high risk" group composed of people who have more than an even chance of developing clinical coronary heart disease.—I am, etc.,

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"Bedside Blood Urea"

SIR,—Dr. B. A. L. Hurn (December 22, p. 1648) recently proposed a rapid manual method for bedside blood urea estimation. The technique entails measurement of blood, stabilizing solution, and Nessler's reagent

followed by colorimetric quantitation using glass standards in a Lovibond comparator. To further simplify urea determinations a precipitation technique developed in our hospital¹ has been successfully employed for monitoring azotaemia at the bedside with a degree of accuracy comparable to that obtained by conventional laboratory procedures.

Finger-tip blood is collected in uniform-bore capillary tubes which are flame-sealed and centrifuged. Tubes are broken above the sedimented cells. A standardized drop of serum (28 μ l.) is mixed on a glass slide with four calibrated drops (160 μ l.) of 50% acetic acid and a single drop (40 μ l.) of 10% xanthidrol in methanol (British Drug Houses). Homogeneous suspensions are then drawn into uniform-bore microcapillary tubes to a pre-calibrated height of 60 mm. After flame-sealing, tubes are allowed to stand for at least 15 minutes and centrifuged in an International Microcapillary centrifuge (Model MB) for 15 minutes. Other types of centrifuges may also be used for this purpose. Columns of sedimented dioxanthylurea are measured to the nearest 0.1 mm. by means of a stand magnifier (2 $\times$).

In order to establish a relationship between capillary columns of precipitate and urea nitrogen concentrations, blood was collected from 100 normal and uraemic subjects. Measurements of dioxanthylurea precipitate levels were compared with colorimetric determinations of serum urea nitrogen.^{2,3} From these data an equation, mg. urea nitrogen/100 ml. serum = $13.5 \times (\text{mm. dioxanthylurea}) - 5.1$, was derived from a line of best fit. This expression permits conversion of capillary columns of dioxanthylurea into urea nitrogen concentration. The degree of accuracy of such measurements is shown using 10 normal and uraemic sera (see Table). Favourable agreement obtained between calculated and colorimetri-

Comparison of Urea Nitrogen Values Yielded by Precipitation and Colorimetric Techniques

Serum Number	Microcapillary Column of Dioxanthylurea (mm.)	Serum Urea Nitrogen (mg./100 ml.)	
		Calculated	Determined
26	1.0	8	9
27	1.2	11	11
75	2.7	31	31
6	3.0	35	34
45	3.1	37	37
24	5.5	69	75
29	5.8	73	78
53	7.4	95	100
21	12.0	157	150
39	14.0	184	177

cally determined values at low as well as high urea nitrogen levels. Thus the dioxanthylurea technique makes possible accurate and reliable evaluations of uraemia in terms of microcapillary columns of precipitate. Moreover, the procedure is technically simple to perform, employs stable reagents and requires little or no specialized equipment.—We are, etc.,

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Carpal-tunnel Syndrome

SIR,—The article on the carpal-tunnel syndrome by Dr. H. Garland and his associates (March 2, p. 581) is both interesting and instructive. It should be of special benefit to our surgical colleagues.

There are two points which bear comment. The first is the rather surprising inconstancy of the superficial sensory defect in the median distribution in Dr. Garland's cases, and the relative insignificance attached to this finding.

A method which I have found as useful and as reliable as digital pressure of the wrist in evoking distal paraesthesiae is acute flexion of the hand on the wrist, to a maximum degree. This sign is almost invariably present in these cases.—I am, etc.,

Tel Aviv, Israel.

DAVID P. KIDRON.

SIR,—It is refreshing to read an article where everything is so black and white with regards to both diagnosis and treatment as in "Carpal-tunnel Syndrome" (March 2, p. 581).

Sceptics amongst us may possibly be forgiven for wondering whether everything is quite so clear cut when the most important objective test is a muscle test of the power in abductor pollicis brevis, and the majority of those who showed little improvement following operation were classified as severe neurotics.

In general, I am in complete agreement with the authors' views with one important exception. In my experience electromyography has proved itself not only of academic interest but also the most important single aid in the diagnosis and subsequent evaluation of the doubtful case of carpal-tunnel syndrome. However, to get most value from this procedure it is important to measure not only the conduction time of the nerve impulse but also the amplitude and duration of the evoked action potential. The latter two parameters can only be well studied by recording from precisely placed surface electrodes and not by the method quoted of Goodman and Gilliat,¹ who used needle electrodes. The technique involved using surface electrodes has been well documented²⁻⁴ and its reliability critically evaluated. In stimulation of the median nerve and recording the evoked potential from the thenar muscles it is the triad of (1) decreased amplitude, (2) increased duration, and (3) increased residual latency with a normal conduction velocity proximal to the wrist that is almost pathognomonic of carpal-tunnel syndrome. These can be recorded in the great majority of cases before weakness in the abductor pollicis brevis is clinically detectable (even when tested by a skilled neurologist). In this regard it should be remarked that in this laboratory we are less sanguine about the absolute validity of even skilled muscle testing since the work of Beasley⁵ has shown how unreliable this is in the good-to-normal range and our own experience in frequently finding electromyographic evidence of denervation in muscles classified clinically as normal.

The niceties of the use of electromyography in comparison to clinical neurology in examination of peripheral neuropathies is well illustrated by Mulder *et al.*⁶ My conclusions are identical with theirs when they say: "The electromyogram is perhaps most effective as an extension of the neurologic examination. It has the advantages of being more sensitive to alteration of function in the motor unit and of providing the