it produces any incidence of cardiac arrest in non-burned patients. On the other hand there is evidence that in burned patients the incidence of cardiac arrest during induction is 1:209¹ and 1:250.² There are now 18 recorded instances of cardiac arrest during induction in burned patients, and furthermore five patients suffered two episodes of cardiac arrest on different occasions. A review of these cases suggested that there may be a distorted pharmacological response rather than an exaggerated reaction to intubation.

Dr. Pooler may well be right in suggesting that sympathetic overactivity may be the explanation in some cases, and since it is known that suxamethonium can produce sympathetic and parasympathetic stimulation I believe that burned patients may have an idiosyncrasy to this drug and no evidence has yet been produced to deny this suggestion. Whatever the mechanism, however, I believe that it is important to entertain this possibility and it was hoped that by drawing attention to this fact we would decrease the incidence and not increase it as Dr. Langton Hewer suggests.

Dr. Azzopardi's impression of the increased incidence of cardiac arrest associated with anaesthesia can be appreciated if the techniques he describes are fairly common practice, as he suggests, but can this impression really be substantiated?

Dr. Ayre's suggestion that the period of apnoea following suxamethonium between pulmonary ventilation with the mask and with an endotracheal tube *in situ* may be of importance is interesting, but my observations in this centre suggest that 20–25 seconds is a more realistic time for the average anaesthetist in the average case. Unless there is considerable pulmonary pathology this period of time will not produce hypoxia, since it is of shorter duration than one circulation time.—I am, etc.,

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GORDON H. BUSH.

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Margarine Mystery

SIR,—With a great deal of interest we read your annotation entitled "Margarine Mystery" (January 5, p. 6). For the benefit of your readers it should be helpful to know that the average percentage of people who used this special type of margarine was 10–15. One can say, therefore, that a sample of 40 patients, all seen in one day, and all stating to have eaten this brand of margarine, was highly significant. On the basis of this finding the Ministry of Health requested the manufacturer to withdraw the margarine, which contained a new emulsifier, from the market.

Far be it from us to state that all problems in connexion with this very interesting explosion of a symptomatic erythema multiforme-like disease are solved. For instance, no recurrence occurred after re-intake either in West Berlin or in the experiments carried out by Simons.¹ However, your statement that "large numbers of people in the Dutch Antilles and in Surinam ate the same new type of margarine but no cases were encountered in these countries—a surprising finding when the incidence in Holland was estimated to be 5–10% in those exposed," is not in accordance with the facts. This is mentioned by Simons in what you

called a spirited argument. We must remark, however, that the argument of Simons is more spirited than accurate, because no export of this type of margarine (containing the emulsifier) took place to these countries. There were some shipments of quantities of margarine which were more or less slightly contaminated with emulsifier-containing margarine. This contaminated margarine gave a much lower attack rate in Holland.² But even from these quantities almost no margarine was sold to the public in the West Indies because almost all of it could be blocked beforehand. Therefore it was not surprising to hear that only two cases were reported to the Chief Medical Inspector in the Netherlands from these countries.—We are, etc.,

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Committal to Broadmoor

SIR,—I must differ from your legal correspondent (February 9, p. 412) on the issue of the disposal of offenders found to be of less than full responsibility for their actions.

Any offender disposed of under Section 60, or Section 60 with a restriction order under Section 65, can, with the consent of the manager of the hospital (the Minister of Health), be sent to Broadmoor Hospital as he could be sent to any conventional psychiatric unit. The distinction is precisely one of condition of confinement. By the terms of Section 97 of the Mental Health Act, 1959, the patient in Broadmoor Hospital is treated under conditions of special security. This is a difference which should not be removed; and the last people who want to remove it are those who so properly and jealously defend the right of the conventional psychiatric unit to treat its patients in wards with open doors.—I am, etc.,

Broadmoor Hospital,
Berks.

P. G. McGRATH.

Eradication of Brucellosis

SIR,—Your admirable leader (January 26, p. 204) on the subject of the eradication of brucellosis from cattle is not only timely but salutary. However, it failed to record that in Northern Ireland, an integral part of the United Kingdom, such a scheme as you advocate for the eradication of brucellosis from all dairy herds is already in progress. There are 20,000 licensed dairy herds in Northern Ireland, and a scheme for the eradication of the disease had of necessity to be preceded by a great deal of research and preparatory work covering a period of years, notably in the running of a pilot scheme. Also the necessary legislation under the Diseases of Animals Act had to be formulated and passed by the North of Ireland Parliament in order to give the necessary powers. These measures have the approval of the Ulster Farmers' Union.

Our initial milk surveys carried out on milk churns from these farms showed that probably just over 2,000 herds were infected and many of these were without a history of abortions. On the other hand, it indicated that a large number of herds were free from brucellosis.

Our method of diagnosis is to test the churns delivered at the creameries and milk depots; all salable milk must go through these channels, except the farm-bottled

milk which is referred to later. The milk ring test is carried out on the churn samples, and the farms from which positive samples are obtained are visited by veterinary officers and each individual animal is sampled. Blood and, where possible, milk samples are subjected to the whey and serum agglutination tests. The reacting animals are valued and slaughtered, the farmer being paid 75% of the agreed valuation as compensation.

In 1949 all milk from the 20,000 registered dairy herds was by law required to be pasteurized with the exception of the farm-bottling herds which sold raw milk. A survey carried out on the latter herds in 1956-7 showed some 30% to be infected with the organism present in the milk. The Ministry of Agriculture authorized a compulsory eradication scheme for these herds in 1959 in order to remove the possibility of brucella-infected farm-bottled milk, and this aim was achieved in 1961. Now all milk for sale is either from brucellosis-free cows or is pasteurized. At the same time a voluntary scheme for the eradication of the disease from other herds was instituted and a register of free herds published. This voluntary scheme created a great deal of interest in farming circles, and at the beginning of the major scheme (January, 1963) some 700 herds are on this register of free herds.

We would like to make a comment upon the value of pasteurization to the community; it has brought a safety from T.B. and brucella to the urban population, but its value to the rural population is in doubt. Northern Ireland is largely a rural area with a total population of one and a half millions, of which a possible 400,000 are exposed to affected cattle or infected milk prior to processing. These are the 50,000 farmers and their families, the 57,000 farm labourers and their families, and all the rural people, foresters, roadmen, postmen, and people who are deep in the country and who go to the nearest farms for their milk. In this context there are very many herds consisting of beef, hill, and breeding farms and as such are not licensed as dairy farms; they do produce some milk, however, which is not subject to pasteurization. No country which has eliminated brucellosis in humans has ever done so simply by pasteurizing the milk. Nor has any country done so exclusively by the use of a live vaccine. All countries which have followed this practice have finally resorted to a test and slaughter policy.—We are, etc.,

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Treatment of Gonorrhoea

SIR,—In the column "To-day's Drugs" of December 1, p. 1467, featuring antibiotics for urethritis, the implication of the opening paragraph is completely at variance with experiences in the Army. The statement that "the days when gonorrhoea could be assumed to respond to a routine course of treatment with penicillin are now very definitely past" is certainly not borne out in military practice and unless substantiated by reliable statistics is misleading.

The routine treatment of gonorrhoea in use at the Royal Herbert Hospital, Woolwich, consists of intramuscular injections of fortified procaine penicillin. One injection (300 000 units procaine penicillin and 100 000 units crystalline penicillin) is given at the time of the diagnosis and repeated the following morning. In 1959, 184 patients were treated and there were 10 known failures,

a relapse rate of 5.4%. In 1960, 155 patients were treated, with nine known failures (5.8%). In 1961 there were only three known failures (1.9%) out of 154 cases treated. These results should leave no doubt that penicillin is still the drug of choice in the routine treatment of gonorrhoea in males.

With regard to the further management of patients failing to respond to routine penicillin schedules, I endeavoured to show in a letter on this subject¹ that some strains of *Neisseria gonorrhoeae* isolated from relapse patients were only relatively less sensitive to penicillin and could be eradicated by increasing the concentration of penicillin in the blood and maintaining this concentration for 48 hours. This is best achieved by multiple injections of the aqueous solution of the sodium salt of benzyl penicillin (crystalline penicillin). Other investigation concerning the resistance of gonococci to penicillin, including relative sensitivity, was undertaken by an M.R.C. working party. The findings were published in an interim report in the *Lancet*.²

The following case histories are given as illustrations:

Case 1.—On September 3, 1962, in Paris a soldier was treated for gonorrhoea with one injection of 600,000 units of procaine penicillin. The urethral discharge recurred on September 6 and was unaffected by a second similar injection. Streptomycin 1 g. was given without improvement. From the 13th to the 17th one injection of 1,200,000 units of "triplopen" was given once daily, but the urethral discharge, containing Gram-negative diplococci, persisted. The patient was referred to the Royal Herbert Hospital, Woolwich, as a case of resistant gonorrhoea.

On October 29 examination confirmed the diagnosis. *N. gonorrhoeae* isolated in culture was found to be resistant to streptomycin but sensitive to penicillin at concentrations of 0.25 u./ml. Injections of 500,000 units of crystalline penicillin were given six-hourly for 48 hours. The urethra was dry and the urine clear by November 2. He was re-examined on December 20 and January 29 and has remained well.

Case 2.—Early in October, 1962, a British sergeant contracted gonorrhoea overseas and was diagnosed at a clinic in the United Kingdom. He was treated with one injection of streptomycin and a course of sulphadiazine of 2 g. t.d.s. for five days without improvement. On October 22 "terramycin" (oxytetracycline) 250 mg. six-hourly was prescribed for five days but was unsuccessful. On October 29 he was given an injection of 2,000,000 units of "crystapen." The urethral discharge recurred on November 10 and the urine became blood-stained. On November 16 Gram-negative diplococci were found in the urethral discharge, and injections of 1,200,000 units of procaine penicillin were given once daily for five days without success.

At Woolwich on November 20 a smear of urethral pus contained Gram-negative intracellular diplococci. In culture colonies morphologically resembling *N. gonorrhoeae* were isolated, but unfortunately died before sensitivity tests were done. Injections of 500,000 units of crystalline penicillin were given six-hourly for 48 hours. On November 24 the urethra was dry, but the first urine specimen was still hazy with pus cells. On November 30 the urethra was still dry and the urine now clear. Examinations on December 7, 1962, and January 8, 1963, were completely satisfactory.

It has been the practice at Woolwich for several years to treat all gonorrhoea relapse cases and all patients presenting with some local complication of gonorrhoea—for example, an acute epididymitis—with multiple injections of soluble penicillin in the manner described above. Many patients have been so treated. In none did the gonococcus survive.

It is appreciated that the giving of multiple injections may be inconvenient in civilian practice, but the number