but their significance had escaped the operator concerned, who had merely repeated the test with satisfactory results and reported the autoclave as air-tight.

Entry of air into a sterilizer after the prevacuum but before sufficient steam has entered the chamber to create a positive pressure is a known cause of inadequate steam penetration of the load, even with a satisfactory prevacuum,[3] so that the existence of this gross intermittent fault and the absence of any means of detecting its occurrence during a sterilizing run caused considerable concern. After discussions with the engineers and with the manufacturers of the equipment a hand-operated valve was installed to stop the entry of steam for a period when the autoclave turns from "prevacuum" to "sterilizing," at which point the vacuum pump is automatically disconnected from the chamber. A high-vacuum gauge (calibrated in mm. Hg) of a type which is not damaged by steam under pressure was also installed and connected to the chamber.

These modifications allow a leak test to be carried out during every cycle, and this is done by holding the autoclave in an evacuated state for a period of one minute when the automatic controller turns from "prevacuum" to "sterilizing." If the vacuum is held satisfactorily steam is then admitted to the chamber and the cycle proceeds, but if a leak occurs the chamber is filled with air and the cycle restarted. After the institution of this test one autoclave failed four times in 26 runs and the other once in 40 runs.

The most up-to-date automatic high-vacuum sterilizers available at the present time are equipped with devices to detect the entry of air into the chamber during the sterilization period, and these would presumably detect this type of fault, but there must be many older high-vacuum sterilizers in use giving a good prevacuum and passing the air-tightness tests and Bowie-Dick tests and appearing to function satisfactorily. A failure of the non-return valve of such an autoclave could, however, lead to an undetected failure of steam penetration of the load.—I am, etc.,

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Results of Operation on Open Myelomeningocele

SIR,—Dr. T. Mawdsley and his colleagues state in their article (18 March, p. 663) that "it has already been shown that early operation on the majority of open myelomeningocele children born in an area will result in a survival rate of 49%." However, the figures published in the article do not support such a statement.

Of the 130 cases surviving more than one day 71 became long-term survivors, and of these 64 were open myelomeningoceles (Table I). No analysis of the 59 deaths into cases of open or closed myelomeningocele was made. Thus, on the published figures, the 59 deaths could all be in cases of open myelomeningocele, in which case the survival among open myelomeningoceles would be about 52%. On the other hand, the 59 deaths might include no cases of open myelomeningocele, in which case the survival rate in cases of open myelomeningocele would be 100%.

I should be interested to know how many of the deaths were in fact in cases of open myelomeningocele.—I am, etc.,

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Chloramphenicol

SIR,—Dr. I. David Monger (1 April, p. 55), in his interesting letter discussing the varying frequency of the use of chloramphenicol, appeals for enlightenment concerning the risk of toxicity in the use of this drug. My main qualification for attempting to answer this very difficult question lies in the fact that towards the end of 1964 I did an extensive survey of the literature written up to that time for the preparation of a contribution to a symposium on the use and abuse of antibiotics organized by the British Council at the Middlesex Hospital in November 1964.

In attempting to survey the relative toxicity of chloramphenicol and penicillin with regard to fatality rates it was interesting to learn from study of the national survey in the U.S.A. of drug reactions occurring in general hospitals from 1953 to early 1957[1] that among 1,070 reports of severe reactions 809 were anaphylactoid reactions (mostly due to penicillin), accounting for 74 deaths (9%), and 46 were blood dyscrasias, accounting for 27 deaths (55%), of which 26 had been given chloramphenicol. This survey took no account of the relative frequency in the use of antibiotics, as statistics on this subject are impossible to obtain from any source.

The Registrary of Blood Dyscrasias of the American Medical Association started collecting information about toxic effects of drugs on the bone marrow in 1955,[2] and by May 1963 had surveyed 2,034 reports, of which chloramphenicol was shown to be the commonest agent incriminated (407 cases), though in only 171 instances was this antibiotic the only one employed. Aplastic anaemia (mortality over 50%) accounted for 128 of these cases, and in the remainder less severe bone marrow changes of reversible nature were found.

Dr. J. B. Spooner,[3] of Parke Davis & Co., kindly supplied me with his estimate of the risk of fatal aplastic anaemia as less than 1 in 120,000 cases treated in the years 1956 to 1958, during which over 1½ million normal adult courses were given. During 1959 a comparable figure in the U.S.A. was 1 in 225,000 cases. He referred to an estimate[4] in the U.S.A. that penicillin carried a fatality rate of 1 in 93,000 cases treated. Though I have not made any recent study of fatal drug reactions I have no reason to suppose that fatality rates have appreciably altered in the last four years. If these figures are to be relied on it appears that penicillin has carried a greater risk in causing death than chloramphenicol in the past, at any rate in the United States.

It should be realized that anaphylactoid reactions due to penicillin cannot with certainty be avoided. Most deaths from aplastic anaemia due to chloramphenicol can be avoided by making sure that the safe maximum dose of 30 mg. per kg. per day is never exceeded, that courses of more than seven days are avoided (except in the cases of enteric infections, when repeated blood examinations are necessary), and that with defective renal function the drug should either be avoided or the dose kept low in order to avoid high blood levels. The drug carries special dangers in newborn infants[5]; and repeated courses of the drug also confer additional hazards. Provided these facts are borne in mind, one would not therefore regard chloramphenicol as a dangerous drug to use when there are definite indications in suitable subjects.—I am, etc.,

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Treatment of Osteoporosis

SIR,—In the list of effective measures given in the article on osteoporosis (29 April, p. 295) it is stated that a programme of exercises is essential, and the examples quoted are a static bicycle, or the pool. These are hardly very good examples. We have not all got pools. When riding a static bicycle the patient is bent.

Surely an important factor causing indentation or collapse of vertebral bodies is the fact that these patients are bent and have not attempted to perform a full extension of the spine for years and years. Therefore the essential exercises are extension exercises. These must, however, be carried out properly. The popular extension exercises carried out in the prone position and lifting head and legs put a compression force on discs and vertebral bodies. The exercises must be carried out supine, the patient arching up his back to lie on the back of his head and buttocks. Arching thus, the spine is not weight-bearing.

I was interested to note that a brace "may help by restoring confidence." In other words its use is purely psychological. As in the next line it is stated that the patient should give it up as soon as possible, why prescribe it at all?—I am, etc.,

Tunbridge Wells, Kent. W. H. GERVIS.

Barbiturates in Impulsive Attempted Suicide

SIR,—In a recent survey of 680 instances of attempted suicide in Brisbane we estimated that 68% of the attempts could be classed as impulsive. By this we implied that they were not planned or premeditated but occurred without much thought for consequences in the course of an acute interpersonal and emotional conflict. Our figure of 68% is very much in agreement with findings elsewhere.[1-3] Eighty-three per cent. of this impulsive group used barbiturate sedatives for their suicidal attempts. We were struck by the very small number of patients using salicylates or compound analgesic preparations, all of which are extremely popular and readily available in Australia.