

pulled in, and oxygen administered by mask. These capsules would be used by recumbent patients requiring lengthy treatments, such as those with gas emboli, coronary thrombosis, and traumatic vascular lesions.

The theatre compartment (far right in Fig.) is also filled with air and can be entered at either end. It would be used for patients requiring constant attention or surgery under pressure.

The advantages of this system are. (1) Should the patient in a capsule require attention during treatment he is accessible without undergoing complete decompression. (2) The treatment of one patient can be controlled without interrupting that of others. (3) A capsule can remain empty while the others are in use, so that scrupulous cleaning can be performed after use by an infected patient. (4) If suitably designed the patient can sit up, which is impossible in a conventional small chamber.

With the equipment now available, however, I believe that several small chambers in a properly staffed unit is the most practical solution if hyperbaric oxygen is to be made available to those who require it.—I am, etc.,

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<sup>1</sup> *Proceedings of the Fourth International Congress on Hyperbaric Medicine*, ed. J. Wada and T. Iwa. London, Bailliere, Tindall and Cassell, 1970.

<sup>2</sup> Western Regional Hospital Board, *Working Party on Fire Hazards in Hyperbaric Environments*, Glasgow, 1967.

<sup>3</sup> *U.S. Navy Diving Manual*, Washington, D.C., U.S. Government Printing Office, 1963.

SIR,—When clostridial infection is confined to the central nervous system there is no evidence that the infection spreads through healthy brain and no clinical indication of toxæmia.<sup>1</sup> The spread of the disease and the toxæmia are the factors controlled by raising the tissue oxygen tension. Further to your leading article on gas gangrene and hyperbaric oxygen (23 September, p. 715), may I make the comment that there seems to be no place for hyperbaric oxygen in clostridial gas-producing infections confined to the central nervous system?<sup>2</sup>—I am, etc.,

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<sup>1</sup> Cairns, H., Calvert, C. A., Daniel, P., and Northcroft, G. B., *British Journal of Surgery (War Surgery Supplement No. 1)*, 1947, p. 198.

<sup>2</sup> Keogh, A. J., *Postgraduate Medical Journal*, in preparation.

### Induction of Labour

SIR,—Rupture of the forewaters to prevent the risks of postmaturity is a simple procedure that can be carried out in hospital, in a general practitioner unit, or in the home. The method becomes hazardous when labour fails to start after 24 hours and oxytocic drugs have to be used. Salzman<sup>1</sup> described the tapping of natural maternal oxytocin by manual suckling of the breasts. He applied his technique to the maintenance of strong, efficient contractions in the first and second stages of labour and to the management of the third stage. He doubted whether suckling could be used to initiate labour because it was usually ineffective if cervical dilation was absent. But sweeping

of the membranes and digital dilation of the cervix are commonly performed immediately before artificial rupture of the membranes, and by this action conditions are set for an immediate response to suckling.

The areola of one breast is squeezed between forefinger and thumb just behind the nipple in precisely the same manner as in manual expression of milk. The pressure used should be just sufficient to express colostrum and should not be uncomfortable to the mother. Manipulation is continued for 45 seconds at intervals of five minutes. The first uterine contraction should occur after not more than four periods of suckling and a contraction should follow each stimulus thereafter. Sooner or later contractions occur spontaneously before the next suckling action is due. The mother is then in labour and will continue without further aid. It is unusual to have to continue artificial suckling beyond one hour.

The average induction-delivery interval can be cut from 22½ hours when using artificial rupture of the membranes to 10½ hours when breast stimulation is added. This reduction is achieved almost entirely by removing the delay between artificial rupture of the membranes and the establishment of labour. The technique is applicable both to primigravidae and multigravidae, and no significant difference was noted between the two classes in speed of establishment of regular contractions.—I am, etc.,

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<sup>1</sup> Salzman, K. D., *Journal of the Royal College of General Practitioners*, 1971, 21, 282.

<sup>2</sup> Salzman, K. D., *Journal of the Royal College of General Practitioners*, 1971, 21, 670.

### Diagnosis of Chronic Beryllium Disease

SIR,—The widespread use of beryllium in modern technology constitutes a continuing hazard to the health of industrial workers, as even trivial injuries contaminated with beryllium may lead to extensive disease.<sup>1</sup> Chronic beryllium disease is characterized by epithelioid-cell granulomas in the tissues similar to those of sarcoidosis and the two conditions may be difficult to distinguish in the absence of chemical analysis.<sup>2</sup> Beryllium metal and salts are known to be sensitizing agents, but the use of beryllium-patch skin tests poses hazards of sensitizing unexposed subjects. Alternative methods for the diagnosis of both diseased and sensitized subjects are therefore required. It has recently been shown<sup>3</sup> in one patient that in vitro blastoid transformation of lymphocytes by beryllium salts may be of value.

We have studied seven patients with chronic beryllium disease using the macrophage migration inhibition technique (M.I.F.). Lymphocytes were cultured for 72 hours with 0.5 ml of 10<sup>-9</sup>M beryllium sulphate solution. The presence of M.I.F. was assessed using unsensitized guinea-pig peritoneal macrophages. All the patients examined had a history of beryllium exposure with clinical, physiological, and radiological evidence of chronic pulmonary disease. Additional evidence for the diagnosis was present in the following: sarcoid type granulomas in lung biopsies (4/4) and positive beryllium patch tests (2/4). Six of the seven were on corticosteroid therapy at the time of testing. Two of the seven patients show a migra-

tion index (M.I.=migration area with antigen/migration area without antigen) of less than 0.8. In 10 apparently healthy subjects with no beryllium exposure the M.I. was greater than 0.8 (see Fig.).

The two M.I.F.-positive cases (M.I.<0.8) were both on corticosteroids, though we have previously found that steroid therapy inhibits the M.I.F. reaction in a study on sarcoidosis.<sup>4</sup> In one patient the diagnosis is completely proven<sup>1</sup> but in the second patient biopsy, patch test, and chemical analysis confirmation are not available. The positive beryllium M.I.F. test therefore confirms the diagnosis in case 1 and is of value in diagnosis and in the exclusion of sarcoidosis in case 2.

We would like to thank Dr. V. U. Lutwyche, Harlow Chest Clinic, Essex, Dr. G. S. Kilpatrick, Welsh National School of Medicine, and the late Dr. C. B. McKerrow, M.R.C. Pneumoconiosis Unit Cardiff for access to clinical material. Miss Jennifer Grey is in receipt of a Welsh Hospital Board clinical research grant.—We are, etc.,

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<sup>1</sup> Jones Williams, W., *Proceedings of the Royal Society of Medicine*, 1971, 64, 946.

<sup>2</sup> Jones Williams, W., *British Journal of Industrial Medicine*, 1958, 15, 84.

<sup>3</sup> Van Ganse, W., Oleffe, J., Van Hove, W., and Groetenbriel, C., *Lancet*, 1972, 1, 1023.

<sup>4</sup> Jones Williams, W., Pioli, Elizabeth, Jones, D. E., and Dighero, M., *Journal of Clinical Pathology*, in press.

### Fungal Contamination of Cervical Sponges

SIR,—For several years now it has been the practice in the gynaecological outpatient department of the Victoria Infirmary of Glasgow to employ autoclaved wedges of polyvinyl sponge in place of the more conventional Ayre spatula for the purpose of obtaining cervical smears for exfoliative cytology.<sup>1</sup> The main advantage of this method is that when a smear is equivocal, unsatisfactory, suspicious, or positive the sponge can be processed, affording more material for diagnostic purposes.

When abundant fungal mycelia have been recognized in the smear or in the sponge it has been the custom to report this fact. In a recent case, however, fungi which were not classical yeasts were detected in the smears. Examination of the corresponding sponge revealed such large numbers of identical periodic-acid Schiff positive fungi within its interstices as to arouse suspicion of contamination. Further investigation showed a batch of polyvinyl sponges used as a source for the smaller cervical ones was contaminated by black fungus while still within the maker's wrappings. This fungus was cultured on Sabouraud's medium and proved to be a penicillium. An approach to the makers elicited the information that though fungicide was incorporated during manufacture contamination was a well recognized problem owing to the fact that the sponges were marketed damp within their polyethylene wrappings. The presence of fungi in the smears in this case can therefore be directly attributed to the use of a sponge in lieu of the traditional Ayre spatula.